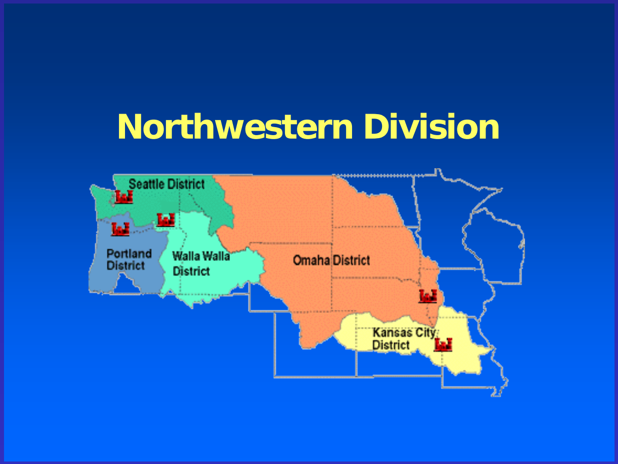
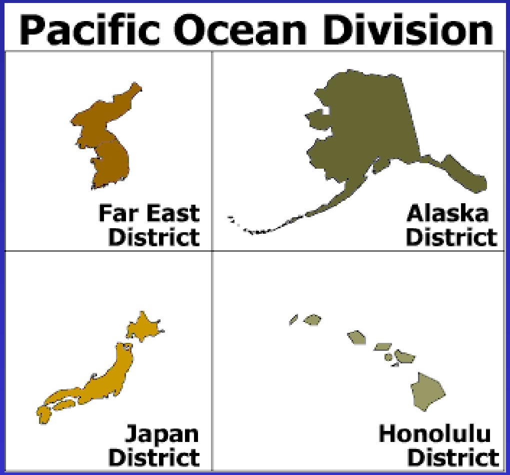
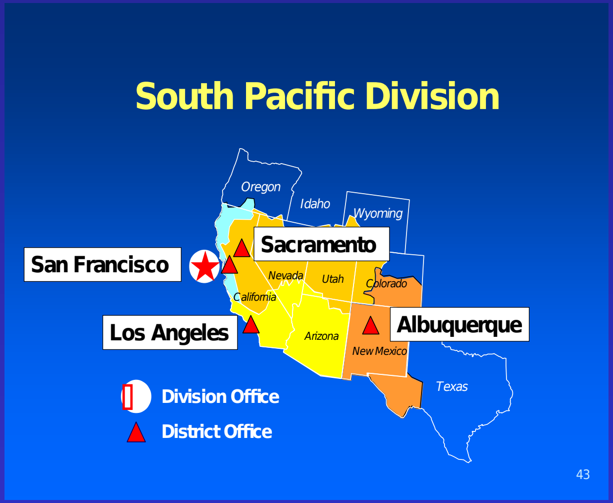
US Army Corps
of Engineers

Pacific Coast Navigation Community of Practice

Northwestern Division
South Pacific Division
Pacific Ocean Division


Northwestern Division
Seattle District
Portland District
Walla Walla District
Omaha District
Kansas City District


Pacific Ocean Division
Far East District
Alaska District
Japan District
Honolulu District


South Pacific Division
Oregon
Idaho
Wyoming
San Francisco
Sacramento
Nevada
Utah
Colorado
California
Los Angeles
Arizona
Albuquerque
New Mexico
Texas
Division Office
District Office
43

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Purpose of the Navigation Community of Practice

Programmatic, regional overview of the navigation business area.

Forum for Districts/Divisions to discuss and resolve issues.

Efficient execution of our navigation mission.

Provide regional expertise and cooperative problem solving.

Keep Division/District Commanders informed of issues and actions.

Identify and prioritize regional navigation R and D needs.

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of Engineers
Northwestern Division

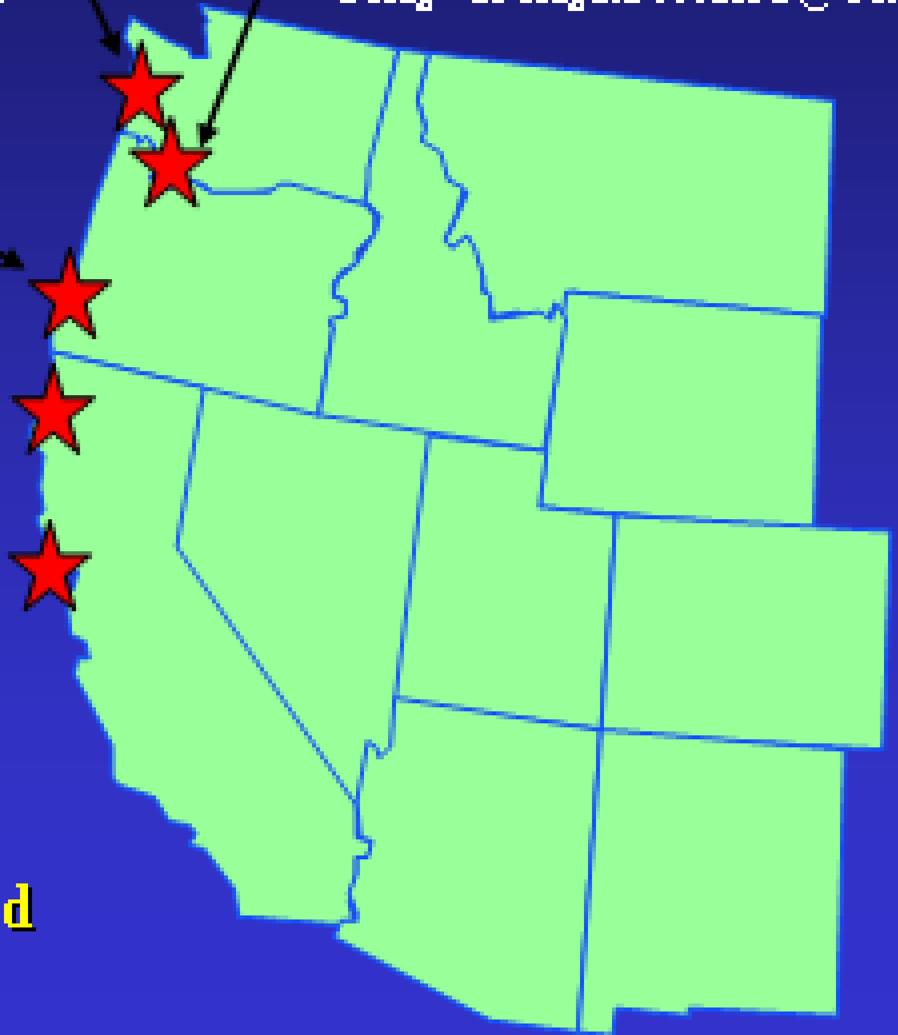
Regional Dredging Initiative

Regional Dredging Contract Development

- Includes San Francisco, Portland, and Seattle.
- Postponed FY 04-07 because of funding shortages in Portland District, low dredge quantities in San Francisco, and until Columbia River Channel Improvements Complete.
- Scheduled for FY 08.

US Army Corps
of Engineers
Northwestern Division

WEST COAST REGIONAL DREDGING CONTRACT



Gray's Harbor
1 Apr – 31 May; 300KCY

Columbia River
1 Jun – 31 July for 2000KCY @ MCR
1 Aug – 15 Aug for 800KCY @ C&LW

Coos Bay
16 Aug – 5 Sep; 600KCY

Humboldt Harbor
6 Sep – 15 Nov; 1000KCY

San Francisco Bay
1 Apr – 30 Nov; 500KCY

★ Projects Being Considered

Welcome FY 2006

Federal Dredging Program

US Army Corps
of Engineers

Northwestern Division

Walla Walla District

Portland District

Seattle District

Pacific Ocean Division

Alaska District

Honolulu District

South Pacific Division

San Francisco District

Los Angeles District

US Army Corps
of Engineers

Los Angeles District

On-going Contracts

- Channel Islands Hbr.
- Santa Barbara Harbor
- Ventura Harbor
- Oceanside Harbor
- San Diego Harbor
- Port of Los Angeles Deepening
- Santa Ana River

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of Engineers

Los Angeles District

Port of Los Angeles
ain Channel Deepenin

On-going Contract
7,000,000 Cubic Yards
Clam, Hopper, Pipeline Dredge
Disposal Type – Various

Contractor: L.A. Deepening

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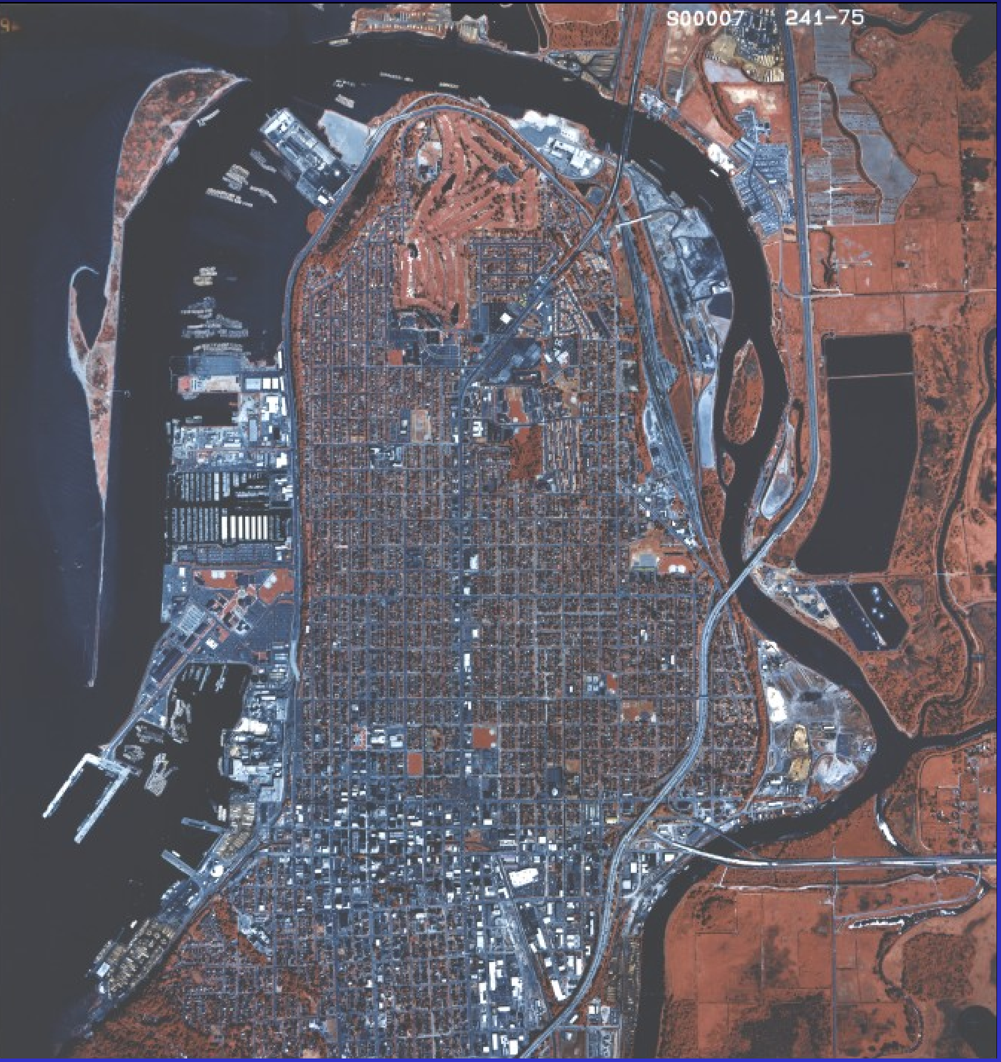
of Engineers

FY05 Project Updates

Everett Harbor, Snohomish River



- Advertising now
- 300,000 CY downstream
- 150,000 CY upstream
- Clamshell & pipeline
- Disposal at Riverside upland

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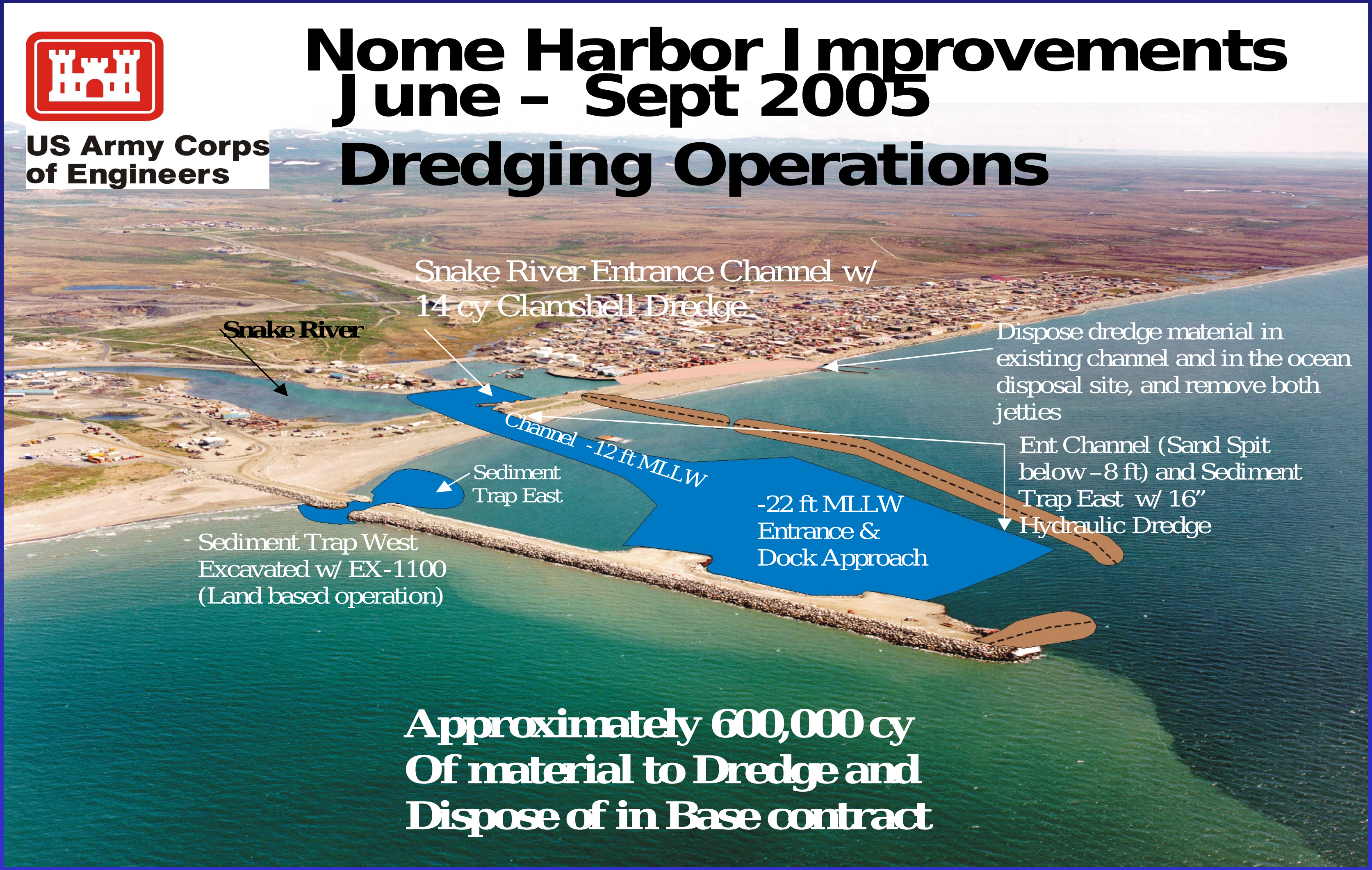
of Engineers

Nome Harbor Expansion



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of Engineers

Nome Harbor Improvements
June – Sept 2005
Dredging Operations

Snake River Entrance Channel w/ 14 cy Clamshell Dredge

Dispose dredge material in existing channel and in the ocean disposal site, and remove both jetties

Ent Channel (Sand Spit below –8 ft) and Sediment Trap East w/ 16" Hydraulic Dredge

Sediment Trap West Excavated w/ EX-1100 (Land based operation)

Approximately 600,000 cy Of material to Dredge and Dispose of in Base contract

Snake River
Channel -12 ft MLLW
Sediment Trap East
-22 ft MLLW Entrance & Dock Approach

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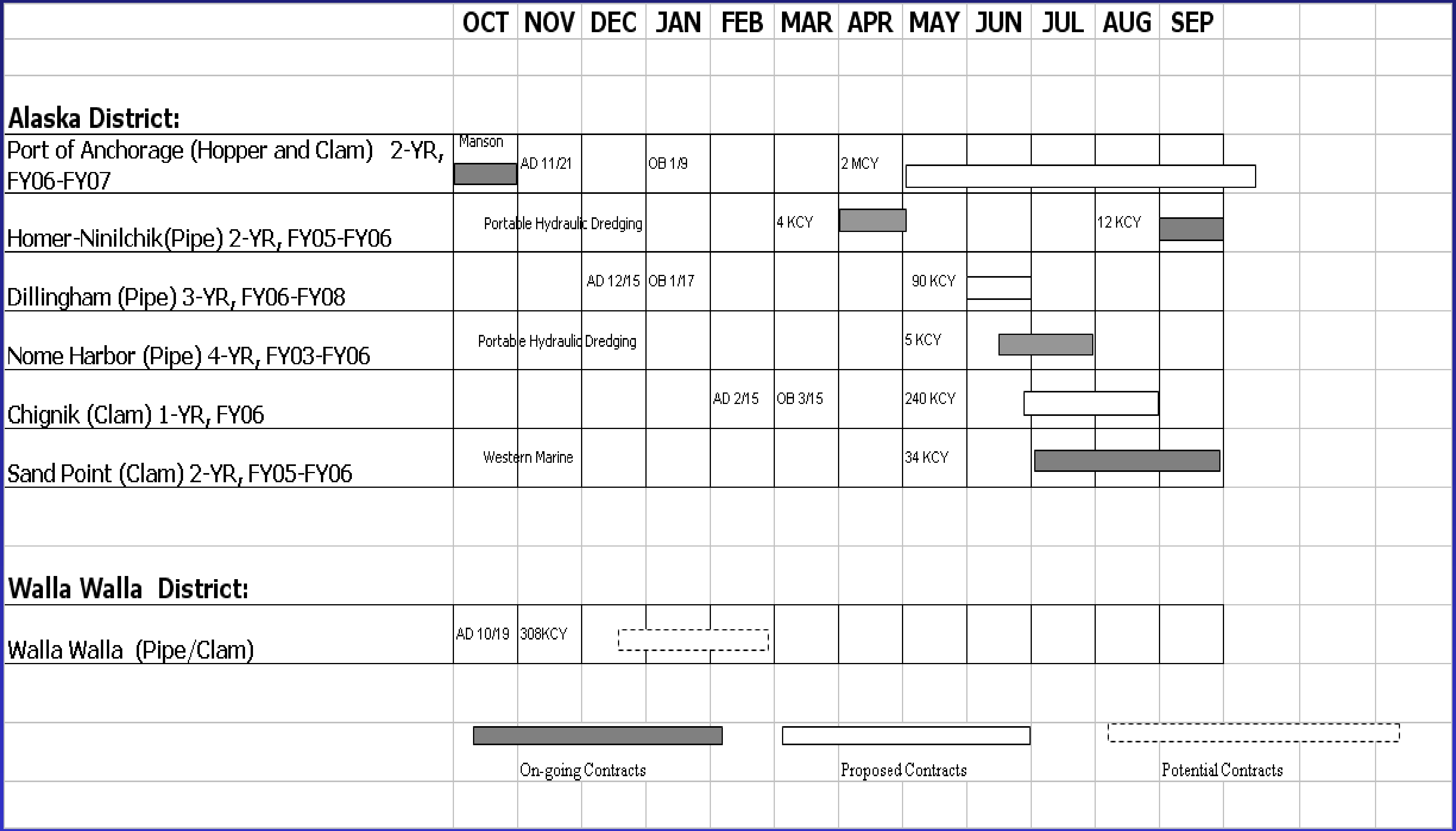
of Engineers

FY06 Dredging Schedule



	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Alaska District:												
Port of Anchorage (Hopper and Clam) 2-YR, FY06-FY07	Manson	AD 11/21		OB 1/9			2 MCY					
Homer-Ninilchik(Pipe) 2-YR, FY05-FY06	Portable Hydraulic Dredging					4 KCY					12 KCY	
Dillingham (Pipe) 3-YR, FY06-FY08			AD 12/15	OB 1/17				90 KCY				
Nome Harbor (Pipe) 4-YR, FY03-FY06	Portable Hydraulic Dredging							5 KCY				
Chignik (Clam) 1-YR, FY06					AD 2/15	OB 3/15		240 KCY				
Sand Point (Clam) 2-YR, FY05-FY06	Western Marine							34 KCY				
Walla Walla District:												
Walla Walla (Pipe/Clam)	AD 10/19	308KCY										

On-going Contracts

Proposed Contracts

Potential Contracts

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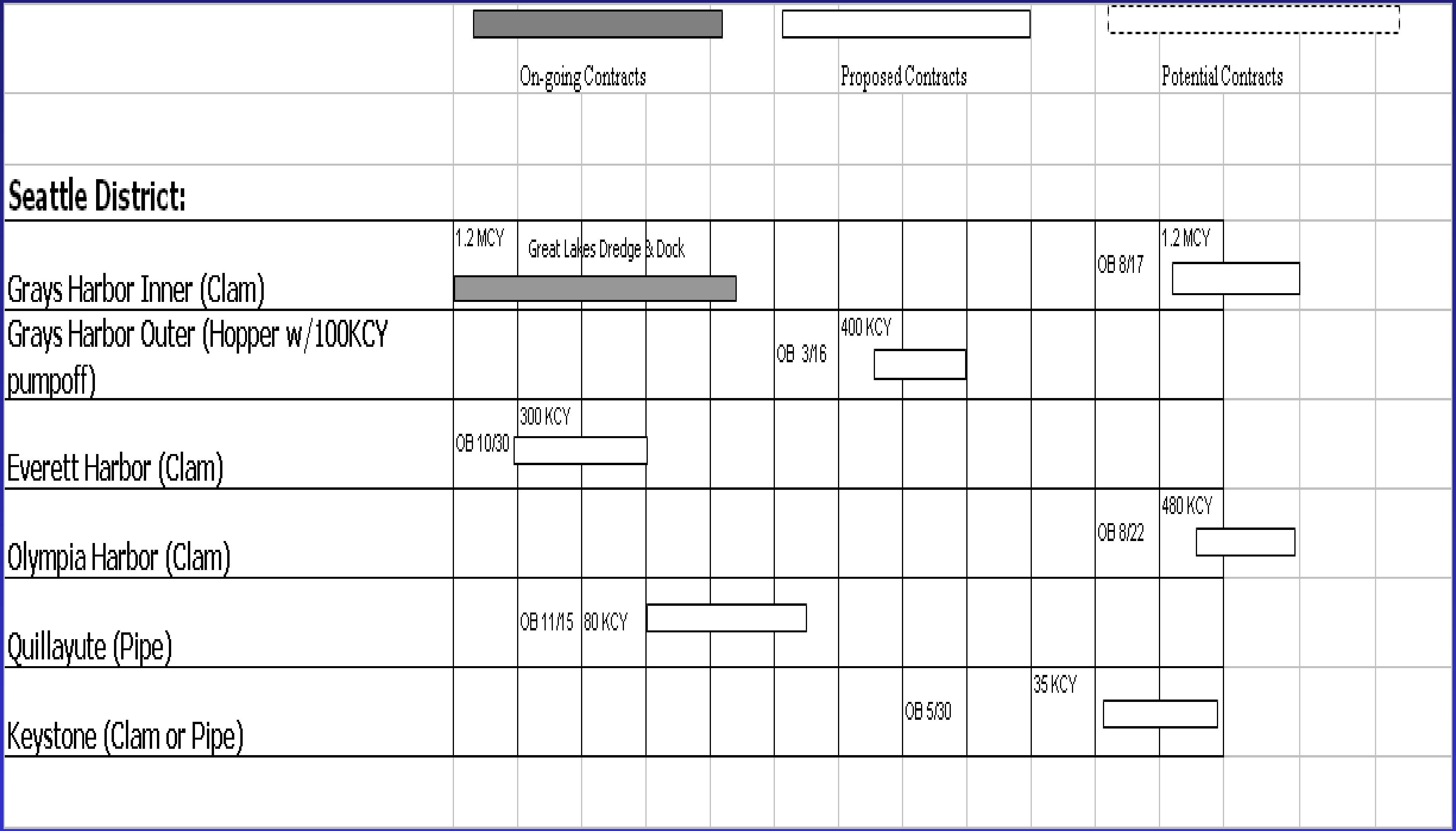
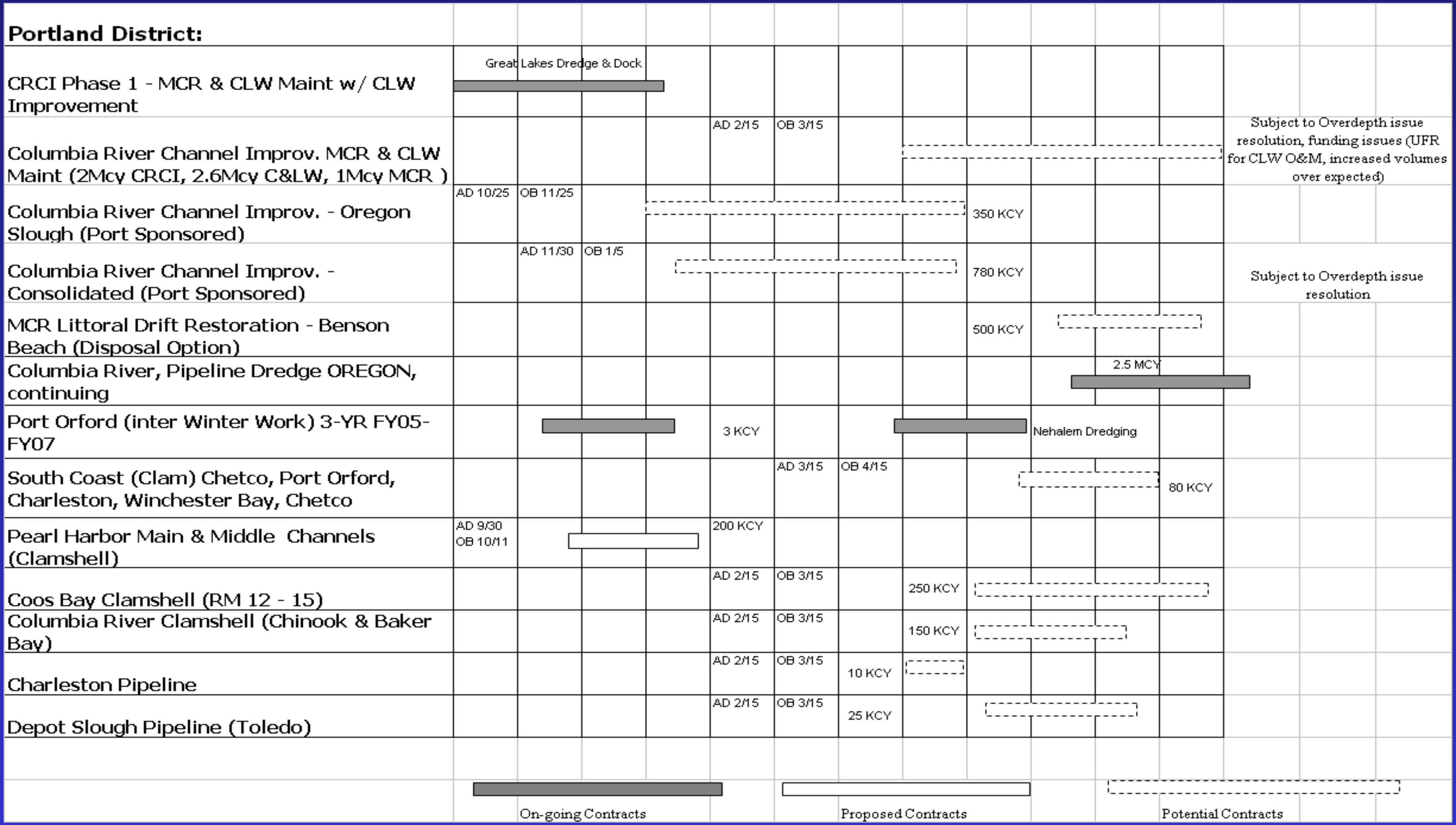
of Engineers

FY06 Dredging Schedule



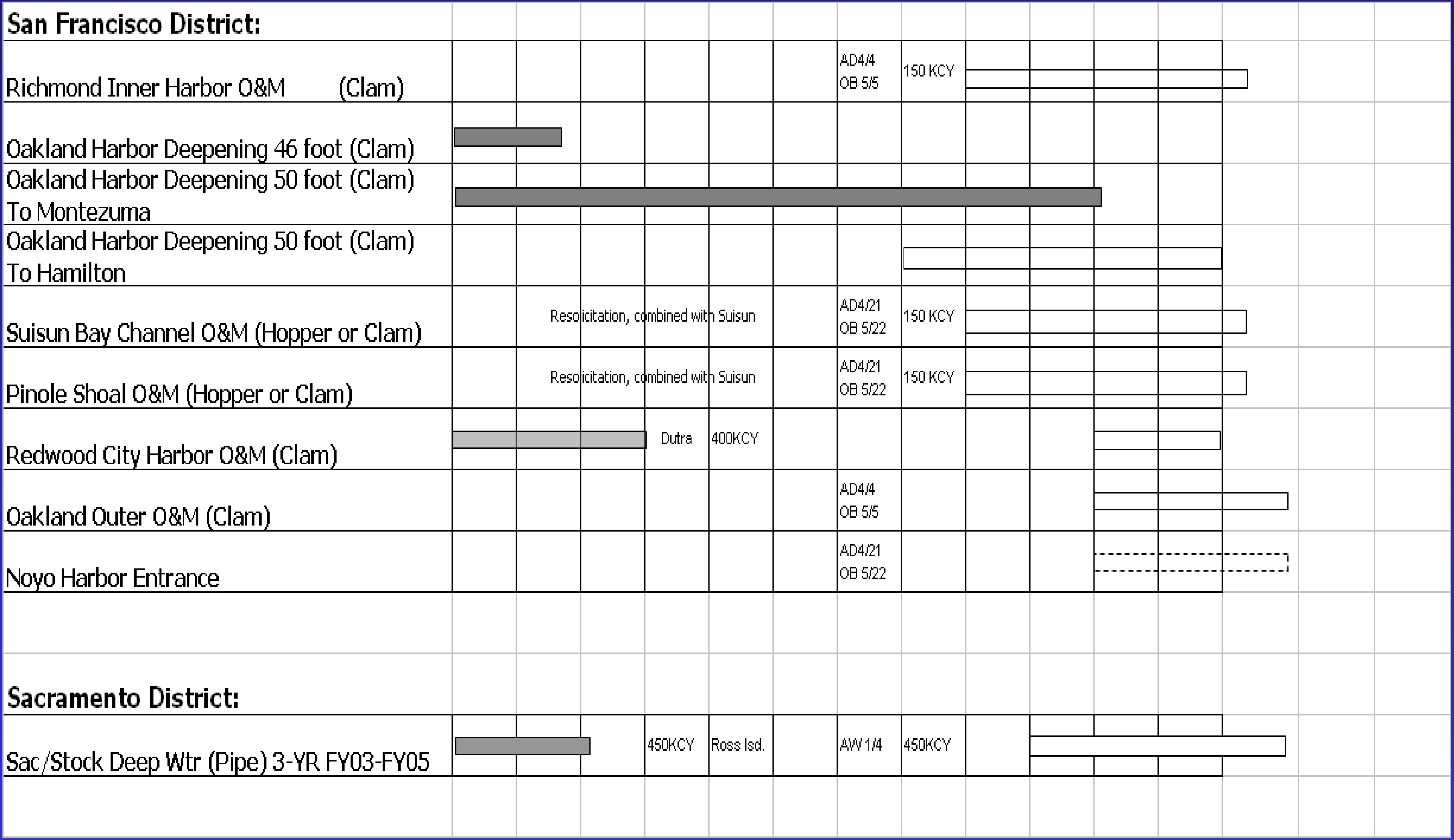
US Army Corps
of Engineers

FY06 Dredging Schedule



US Army Corps
of Engineers

FY06 Dredging Schedule



San Francisco District:												
Richmond Inner Harbor O&M (Clam)							AD4/4 OB 5/5	150 KCY				
Oakland Harbor Deepening 46 foot (Clam)												
Oakland Harbor Deepening 50 foot (Clam) To Montezuma												
Oakland Harbor Deepening 50 foot (Clam) To Hamilton												
Suisun Bay Channel O&M (Hopper or Clam)		Resolicitation, combined with Suisun					AD4/21 OB 5/22	150 KCY				
Pinole Shoal O&M (Hopper or Clam)		Resolicitation, combined with Suisun					AD4/21 OB 5/22	150 KCY				
Redwood City Harbor O&M (Clam)				Dutra	400KCY							
Oakland Outer O&M (Clam)							AD4/4 OB 5/5					
Noyo Harbor Entrance							AD4/21 OB 5/22					
Sacramento District:												
Sac/Stock Deep Wtr (Pipe) 3-YR FY03-FY05				450KCY	Ross Isd.		AW 1/4	450KCY				

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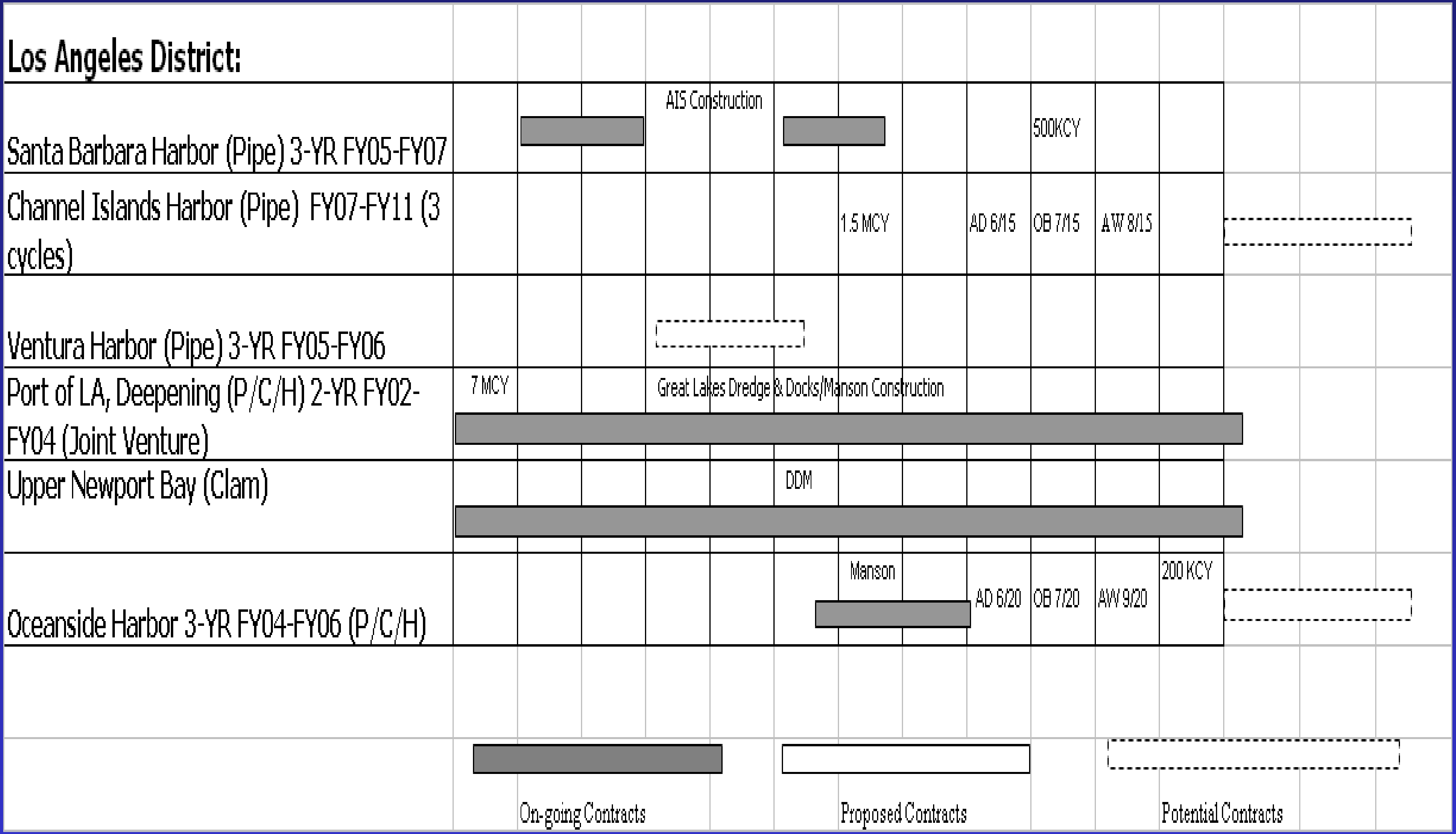
of Engineers

FY06 Dredging Schedule



Los Angeles District:

Santa Barbara Harbor (Pipe) 3-YR FY05-FY07

Channel Islands Harbor (Pipe) FY07-FY11 (3 cycles)

Ventura Harbor (Pipe) 3-YR FY05-FY06

Port of LA, Deepening (P/C/H) 2-YR FY02-FY04 (Joint Venture)

Upper Newport Bay (Clam)

Oceanside Harbor 3-YR FY04-FY06 (P/C/H)

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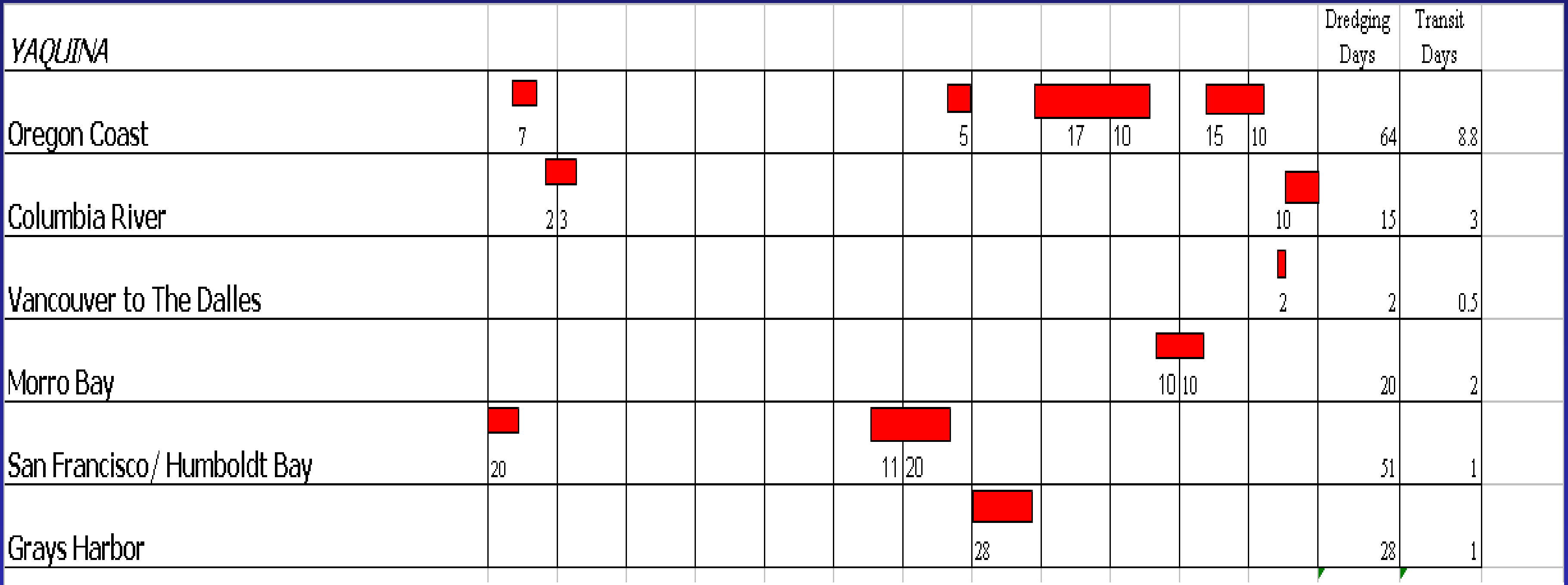
FY06 Dredging Schedule



YAQUINA													Dredging Days	Transit Days
Oregon Coast	7						5		17	10	15	10	64	8.8
Columbia River	2	3										10	15	3
Vancouver to The Dalles												2	2	0.5
Morro Bay										10	10		20	2
San Francisco / Humboldt Bay	20					11	20						51	1
Grays Harbor								28					28	1

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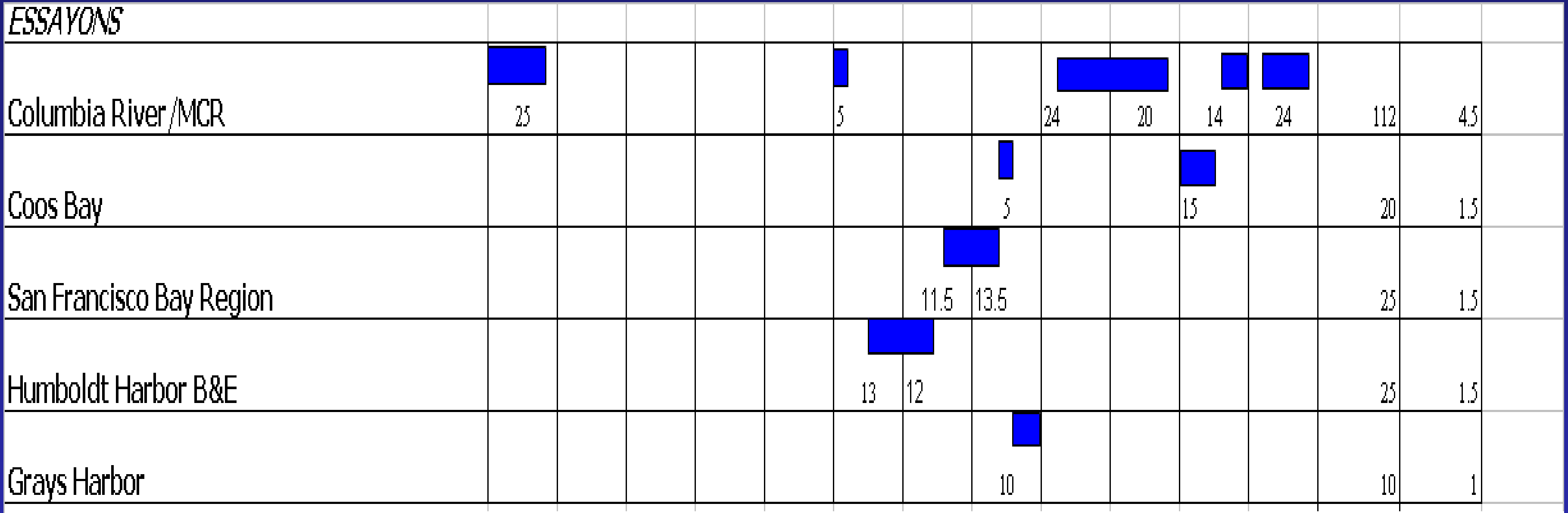
of Engineers

FY06 Dredging Schedule



ESSAYONS														
Columbia River/MCR	25					5			24	20	14	24	112	4.5
Coos Bay								5			15		20	1.5
San Francisco Bay Region							11.5	13.5					25	1.5
Humboldt Harbor B&E						13	12						25	1.5
Grays Harbor								10					10	1

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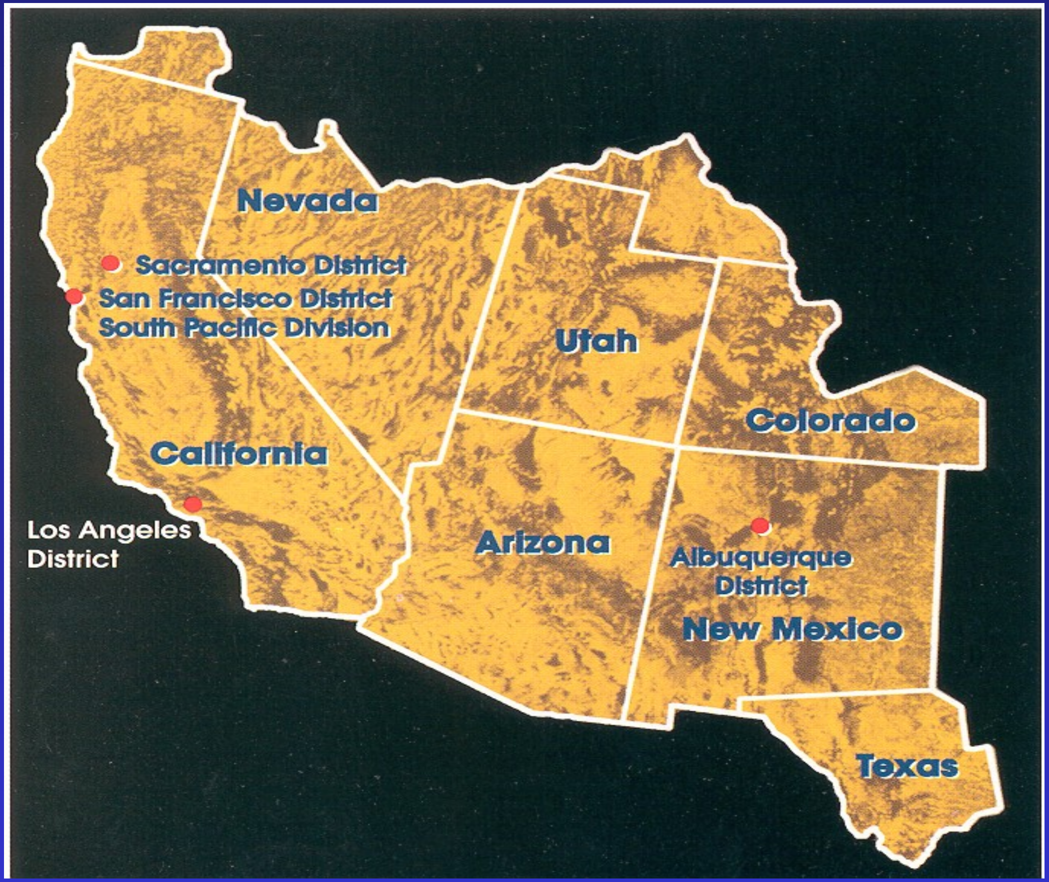
of Engineers

South Pacific Division Boundaries


Nevada
Sacramento District
San Francisco District
South Pacific Division
Utah
Colorado
California
Los Angeles
District
Arizona
Albuquerque
District
New Mexico
Texas

US Army Corps
of Engineers

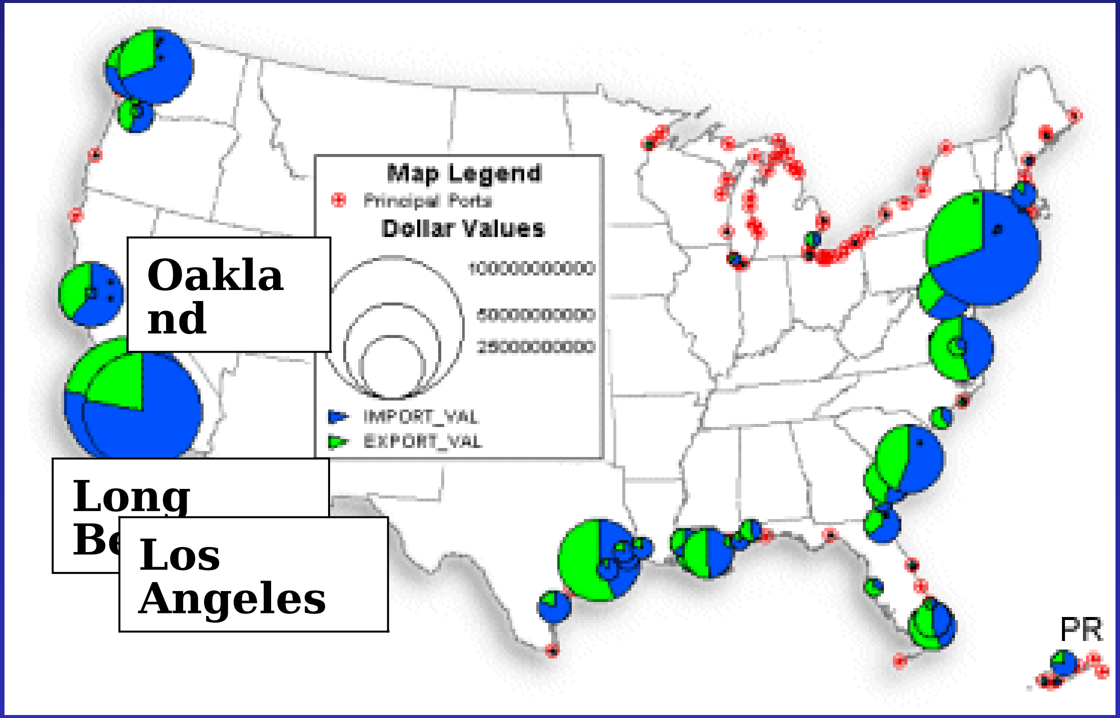
Uniqueness of the Region

- More than one-seventh of the US population and four of the ten fastest growing states
- Diverse geography and climate requiring sensitivity to environmental stewardship
- Water management for flood control, agriculture, environment and human consumption pose unique challenges

Navigation - SPD

US Army Corps
of Engineers

- 5 major commercial ports (>40 ft. depth)
- 7 minor commercial ports (20-40 ft. depth)
- 15 small craft harbors
- Dredging dollars expended provide a high rate of return. $40 to $60M per year yields $192B in Commerce.


Map Legend
⊕ Principal Ports
Dollar Values
100000000000
50000000000
25000000000
IMPORT_VAL
EXPORT_VAL
Oakland
Long Be
Los Angeles
PR

Value of Imports + Exports

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of Engineers

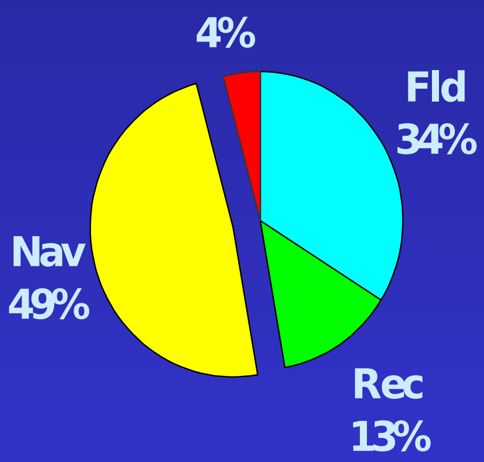
Navigation - SPD

Pier 400 - Port of LA

Ventura Harbor

- 27 Ports & Harbors in California
- California ports are #1 in value shipped
- California ports are #3 in the US in tonnage
- 429 mi of navigation channels
- 35 mi of navigation structures
- Debris mission
- 10.0M cu yd dredged annually

Port of Oakland



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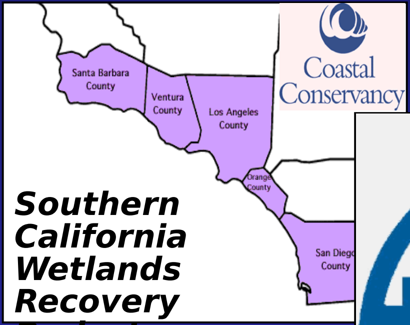
of Engineers

Multi-Agency Collaborative Endeavors

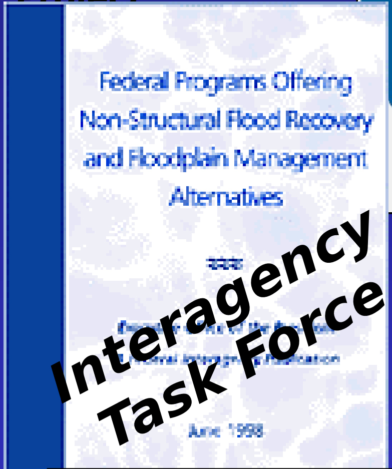

Santa Barbara County
Ventura County
Los Angeles County
Orange County
San Diego County
Coastal Conservancy

Southern California Wetlands Recovery Project

L T M S

INTERNATIONAL BOUNDARY AND WATER COMMISSION
COMISION INTERNACIONAL DE LIMITES Y AGUAS

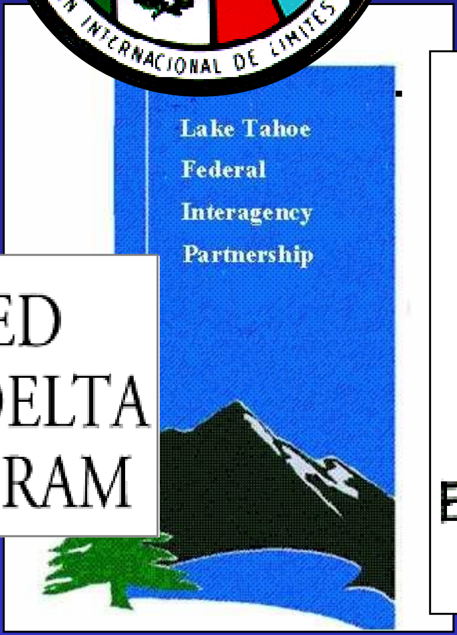
Los Angeles Region
CONTAMINATED
SEDIMENTS
Task Force



Federal Programs Offering
Non-Structural Flood Recovery
and Floodplain Management
Alternatives

June 1998

Interagency Task Force



Lake Tahoe
Federal
Interagency
Partnership

CALFED
BAY-DELTA
PROGRAM

USBR • USFWS • SWRCB • DFG • USGS • NMFS • USACE • USEPA • DWR •

Interagency
Ecological Program

COOPERATIVE ECOLOGICAL
INVESTIGATIONS SINCE 1970

Interagency
Vernal Pool Stewardship Initiative

Interagency Vernal Pool Initiative

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California Regional Sediment Management

… regulation and management of littoral, estuarine, and riverine sediment within the boundaries of a physical system where sediment exchange occurs naturally.

Regional sediment management recognizes that the physical system and embedded ecosystems respond beyond the space and time scales of individual projects, and that a proactive regional planning and engineering approach, will

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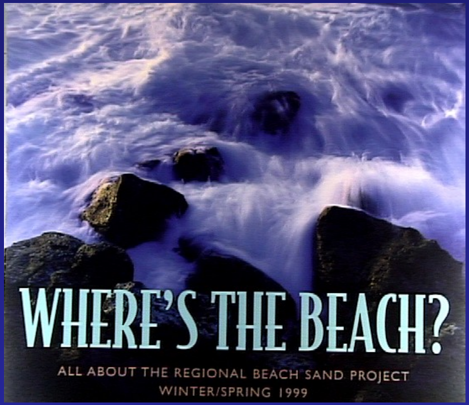
California and RSM

Beach Quality Materials Dredged from Coastal Harbors are placed on Downcoast Shorelines

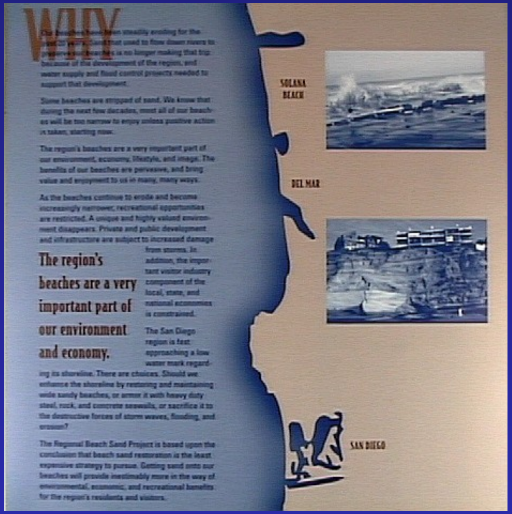
Although the term “regional sediment management (RSM)” is new, recognition of the regional nature of coastal processes and the regional influence of engineering works is not. The inter-relationship between coastal navigation projects and contiguous beaches became a Federal interest at least as early as the 1930s.

San Diego Regional Beach Sand Project

US Army Corps of Engineers

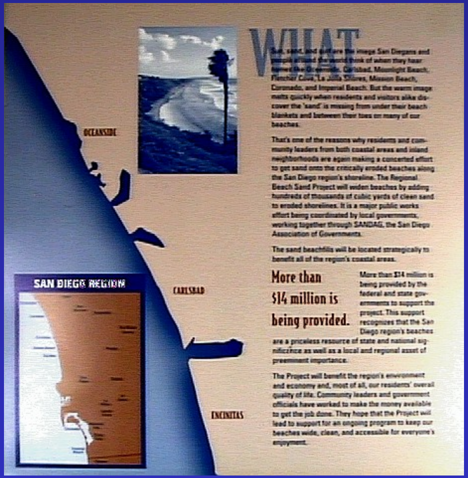

WHERE'S THE BEACH?

ALL ABOUT THE REGIONAL BEACH SAND PROJECT
WINTER/SPRING 1999


WHY

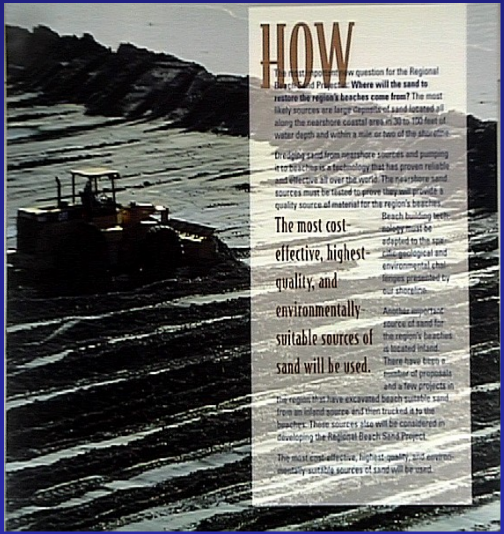
The region's beaches are a very important part of our environment and economy.

SOLANA BEACH
DEL MAR
SAN DIEGO


WHAT

More than $14 million is being provided.

OCEANSIDE
SAN DIEGO REGION
CARLSBAD
ENCINITAS


HOW

The most cost-effective, highest-quality, and environmentally suitable sources of sand will be used.

Beach Quality Materials Dredged from Offshore will be placed on County Shorelines

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of Engineers

Coastal Sediment Management Workgroup

- Federal/State/Local Partnership to Address California's Coastal Needs Established in 1999.
- South Pacific Division & State Resources Agency.
- Leverage State & Federal Funds and Resources.
- Collabo ts
Activiti

US Army Corps
of Engineers
South Pacific Division
CALIFORNIA COASTAL SEDIMENT
MANAGEMENT WORKGROUP
The Resources Agency
of California
ACETI
BAIRD
DOMURAT
STERRETT
FISHMAN
CALIFORNIA
SHORE AND BEACH

US Army Corps
of Engineers

CSMW Participating Agencies

USACE

- South Pacific District
- Los Angeles District
- San Francisco District
- ERDC
- IWR

ADVISORY

- Cal Coast (local agencies)
- Minerals Management Service
- US Geological Survey
- US EPA

CA RESOURCES AGENCY

- Boating & Waterways
- Coastal Commission
- Coastal Conservancy
- Parks & Recreation
- State Lands Commission
- CA Geological Survey
- Department of Fish and Game
- Caltrans

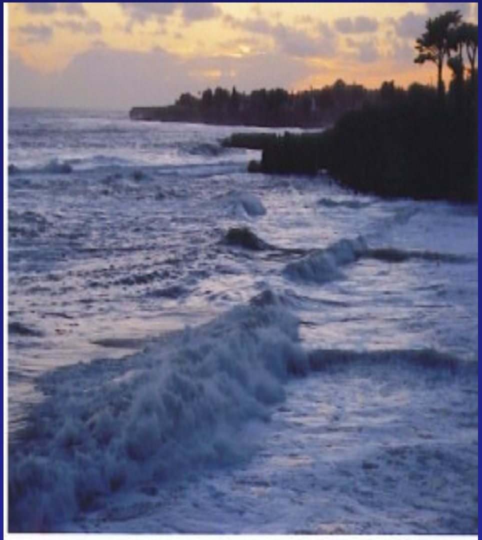
US Army Corps of Engineers

Sediment Management Activities

Actions that affect the *transport*, *erosion*, *removal*, and *deposition* of sediment in a region

- **Dredging and placement**
- **Building structures that divert or trap sediment**
- **Erosion protection structures or methods for riverbanks, shorelines, sea beds, and channel bottoms**
- **Habitat stabilization and restoration**
- **Sand and gravel mining for construction or other purposes**
- **Other**

Mission



To facilitate regional approaches to protecting, enhancing and restoring California's coastal beaches and watersheds through federal, state and local cooperative efforts.

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Project Goals

- Prioritize Regional Sediment Management Needs.
- Streamline the regulatory process.
- Make information widely available.
- Coordinate beach and watershed efforts with Federal, State and Local stakeholders.

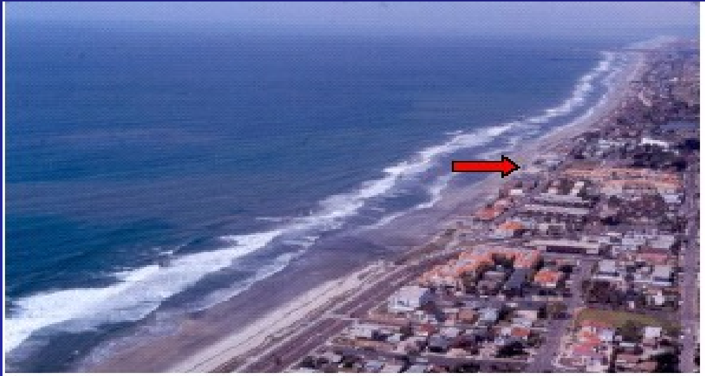

Plate 5.9 Pre-nourishment condition at North Carlsbad site, April 2001

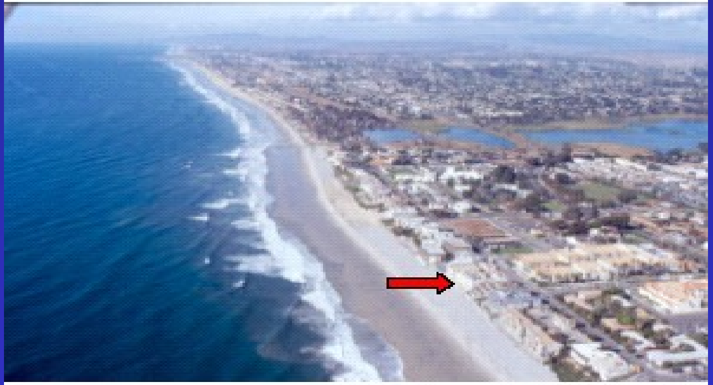

Plate 5.10 Post-nourishment condition at North Carlsbad site, November 2001

(arrows point to approximately the same location on each photo)

Ongoing Initiatives

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- Literature Search
- Fate & Transport of Fines
- Regional Sediment Budgets
- Biological Impacts
- Implementation Strategy
- Policies, Procedures and Regulations Analysis
- Sand Compatibility and Opportunistic Use Templates

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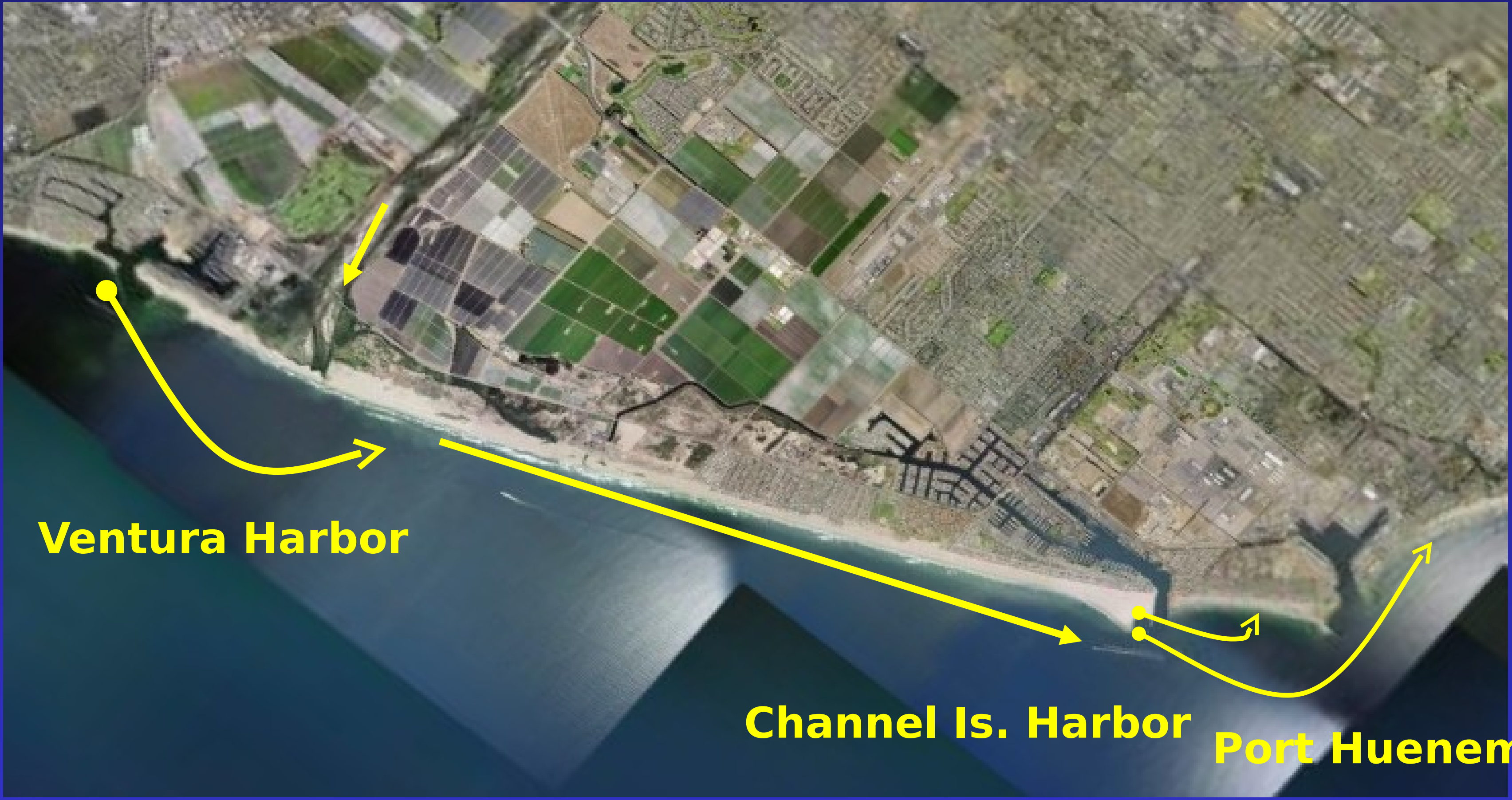
of Engineers

Decision Support Tool for RSM


Ventura Harbor
Channel Is. Harbor
Port Hueneme

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of Engineers

Decision Support Tools

- Assist policy and decision makers, coastal managers, and engineers with powerful, but simple to use IMS applications.
- DSTs will be developed in coordination with stakeholder and technical users.
- DSTs are the building blocks for a Decision Support System

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of Engineers

Benefits of Regional Sediment Management

Cost Savings

- Reduced Rehandling of Material
- Extended Dredging Cycles
- Combined Equipment Mobilization and Demobilization of Linked Projects
- Sharing Information and reduction of duplication of efforts
- Collaborative leveraging of financial and manpower resources
- Improved Environmental Conditions

Additional Benefits of RSM

- Improved agency and interagency working relationship
- Reduce study costs and time
- Enhance support of environmental goals
- Potential to streamline regulatory process
- Shared regional scale data management systems, models and other tools.
- Greater consistency analysis between projects in a region.

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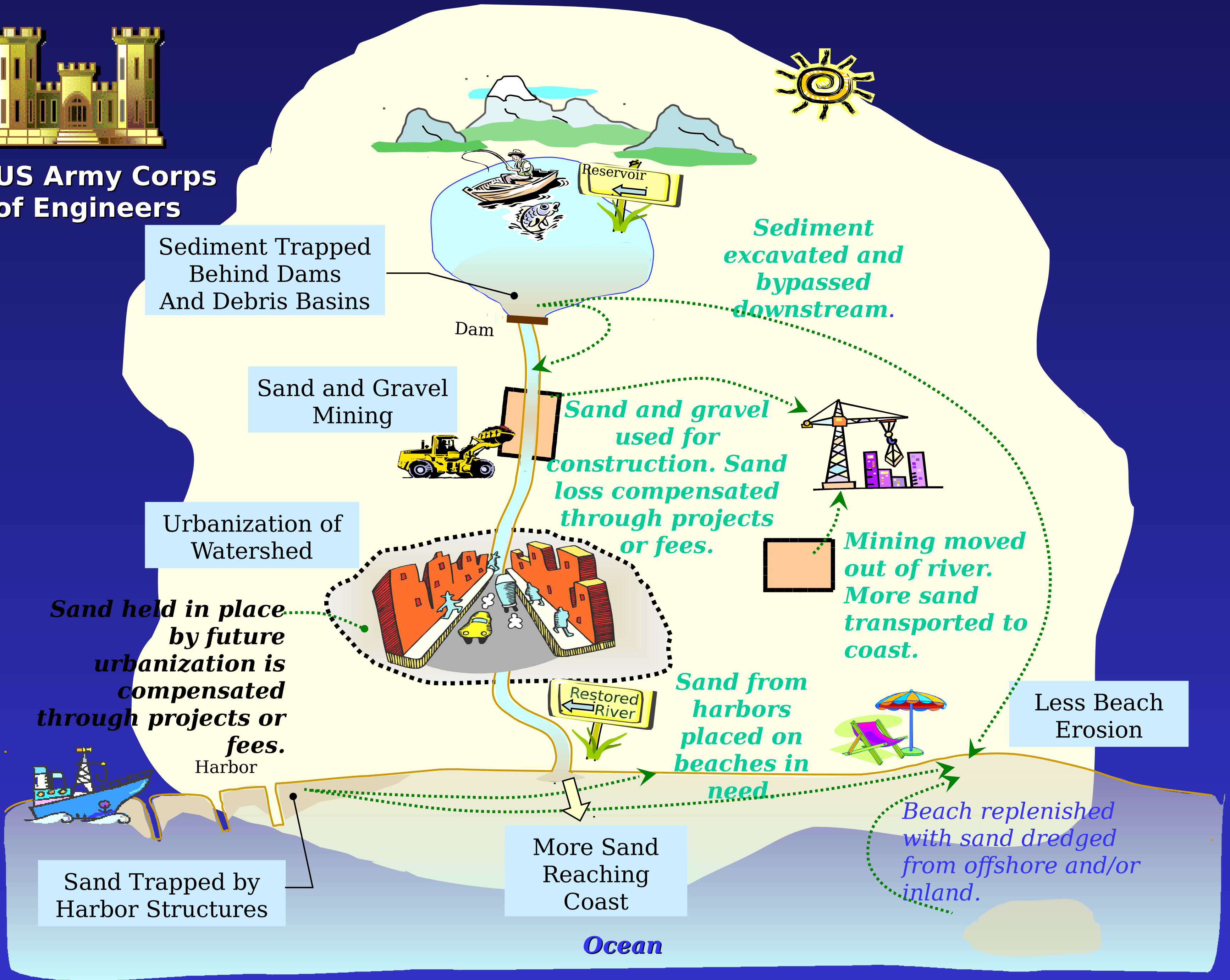


Sediment Trapped Behind Dams And Debris Basins

Sediment excavated and bypassed downstream.

Sand and Gravel Mining

Sand and gravel used for construction. Sand loss compensated through projects or fees.

Urbanization of Watershed

Mining moved out of river. More sand transported to coast.

Sand held in place by future urbanization is compensated through projects or fees.

Sand from harbors placed on beaches in need.

Less Beach Erosion

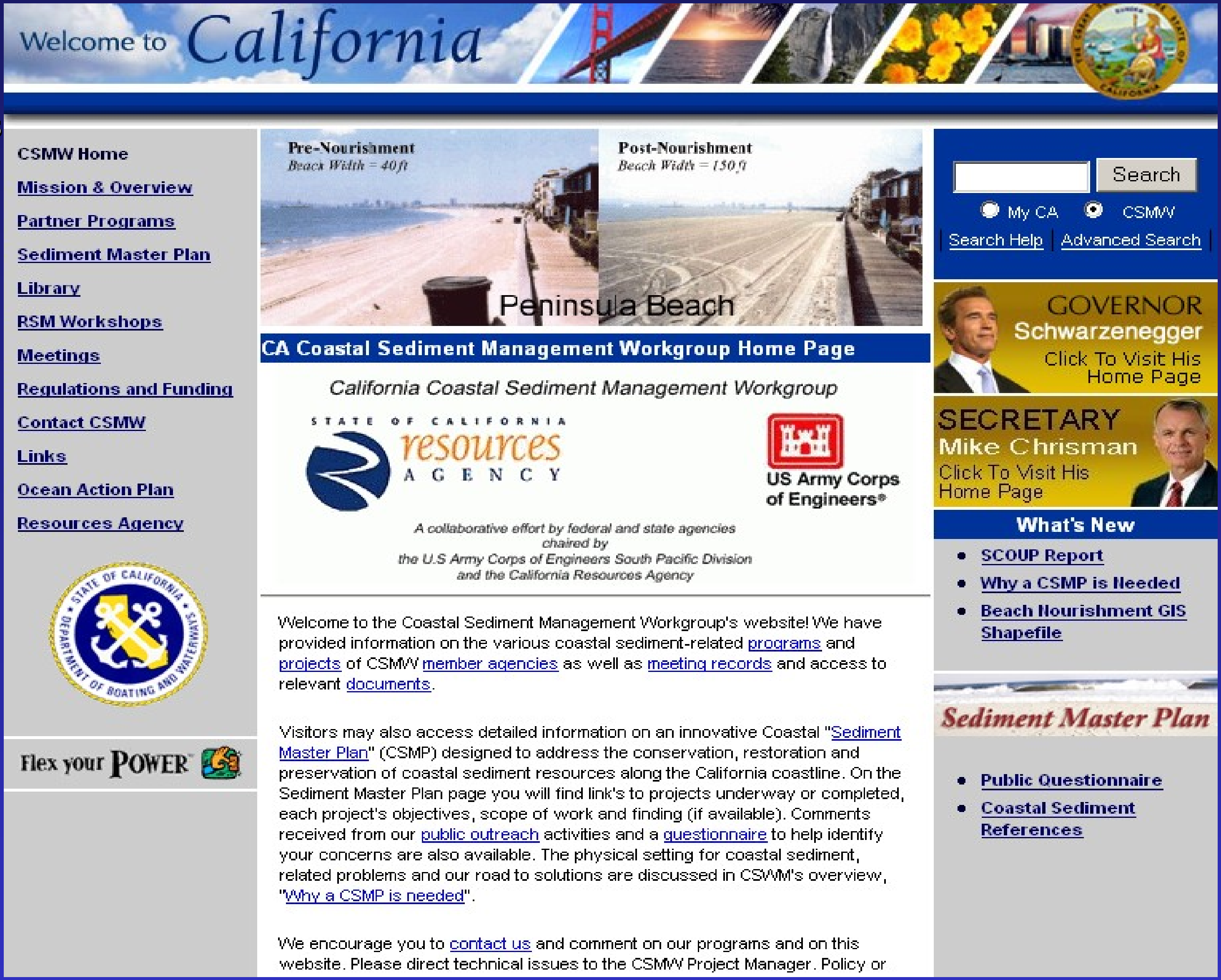
Beach replenished with sand dredged from offshore and/or inland.

Sand Trapped by Harbor Structures

More Sand Reaching Coast

Regional Sediment (Sand) Management

US Army Corps of Engineers



Welcome to California

- CSMW Home
- Mission & Overview
- Partner Programs
- Sediment Master Plan
- Library
- RSM Workshops
- Meetings
- Regulations and Funding
- Contact CSMW
- Links
- Ocean Action Plan
- Resources Agency

Flex your POWER

Pre-Nourishment
Beach Width = 40ft

Post-Nourishment
Beach Width = 150ft

Peninsula Beach

CA Coastal Sediment Management Workgroup Home Page

California Coastal Sediment Management Workgroup

STATE OF CALIFORNIA resources AGENCY

US Army Corps of Engineers®

A collaborative effort by federal and state agencies chaired by the U.S Army Corps of Engineers South Pacific Division and the California Resources Agency

Welcome to the Coastal Sediment Management Workgroup's website! We have provided information on the various coastal sediment-related programs and projects of CSMW member agencies as well as meeting records and access to relevant documents.

Visitors may also access detailed information on an innovative Coastal "Sediment Master Plan" (CSMP) designed to address the conservation, restoration and preservation of coastal sediment resources along the California coastline. On the Sediment Master Plan page you will find link's to projects underway or completed, each project's objectives, scope of work and finding (if available). Comments received from our public outreach activities and a questionnaire to help identify your concerns are also available. The physical setting for coastal sediment, related problems and our road to solutions are discussed in CSWM's overview, "Why a CSMP is needed".

We encourage you to contact us and comment on our programs and on this website. Please direct technical issues to the CSMW Project Manager. Policy or

Search

○ My CA ● CSMW

Search Help | Advanced Search

GOVERNOR Schwarzenegger
Click To Visit His Home Page

SECRETARY Mike Chrisman
Click To Visit His Home Page

What's New

- SCOUP Report
- Why a CSMP is Needed
- Beach Nourishment GIS Shapefile

Sediment Master Plan

- Public Questionnaire
- Coastal Sediment References

http://dbw.ca.gov/csmw/

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Business Execution - Navigation

San Francisco

Sacramento

Los Angeles

US Army Corps
of Engineers

Navigation - San Francisco

- Humboldt Harbor
- Oakland Harbor
- 93 Miles of Channel
- 12.8 Miles of jetties/breakwaters
- 3,200,000 CY annual dredging
- 107,944,000 Commercial Tonnage
- 3 Debris boats
- 2 Survey boats

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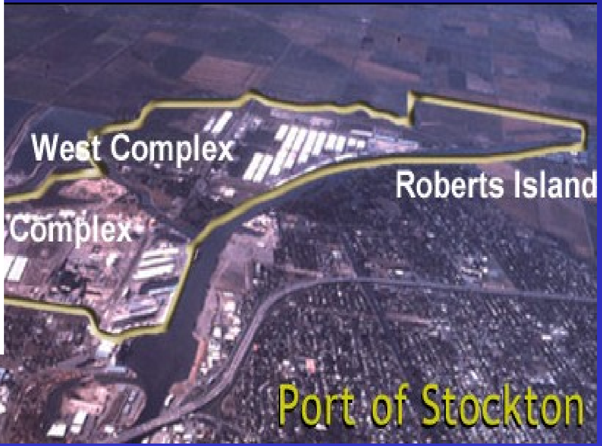
of Engineers

Navigation - Sacramento

- Sacramento Deepwater Ship Channel - 30 ft
- Stockton Deepwater Ship Channel - 35 ft
- Sacramento River Tributaries
- Sacramento Shallow Draft Project
- 303 miles of channel
- W.G. Stone Lock & Barge Canal
- Stone dike & revetment structure maintenance
- Annual commerce-5.4 million tons


West Complex
Complex
Roberts Island
Port of Stockton

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of Engineers

Navigation – Los Angeles

MARINA DEL REY

- 14 Harbors along the California Coast
- POLA 81 ft. Channel
- POLB 76 ft. Channel
- 5 Endangered Species
- 33 Miles of Navigation Channels
- 29 Rock Breakwaters and Jetties
- Annual commerce - 107 million tons

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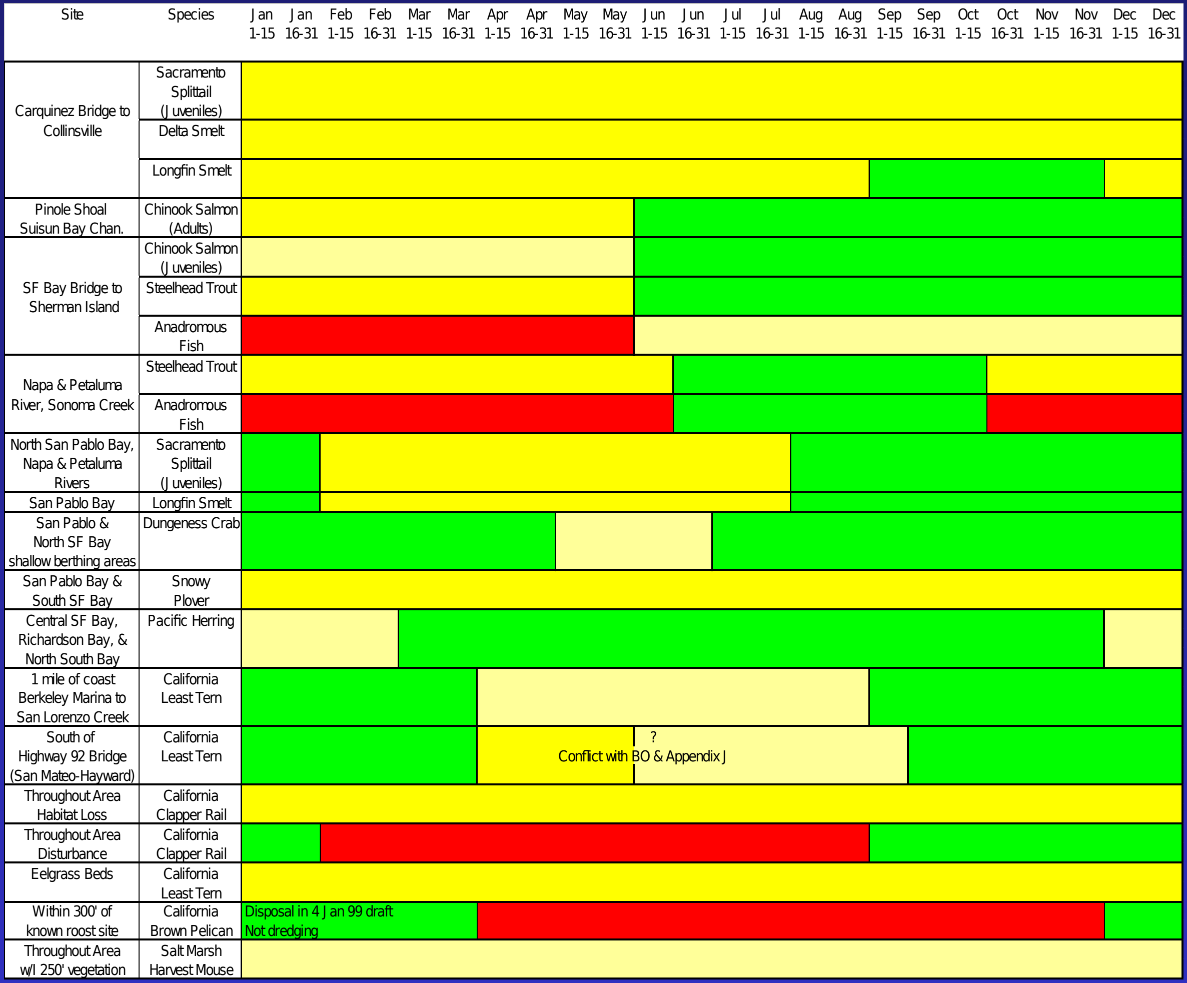
of Engineers

Navigation - Issues

- **Dredging**
  - contaminated/non-contaminated materials
  - environmental windows
- **Disposal**
  - site location
  - monitoring
  - environmental windows



Site	Species	Jan 1-15	Jan 16-31	Feb 1-15	Feb 16-31	Mar 1-15	Mar 16-31	Apr 1-15	Apr 16-31	May 1-15	May 16-31	Jun 1-15	Jun 16-31	Jul 1-15	Jul 16-31	Aug 1-15	Aug 16-31	Sep 1-15	Sep 16-31	Oct 1-15	Oct 16-31	Nov 1-15	Nov 16-31	Dec 1-15	Dec 16-31
Carquinez Bridge to Collinsville	Sacramento Splittail (Juveniles)	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨
	Delta Smelt	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨
	Longfin Smelt	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟨	🟨
Pinole Shoal Suisun Bay Chan.	Chinook Salmon (Adults)	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
SF Bay Bridge to Sherman Island	Chinook Salmon (Juveniles)	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
	Steelhead Trout	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
	Anadromous Fish	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡
Napa & Petaluma River, Sonoma Creek	Steelhead Trout	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟨	🟨	🟨	🟨	🟨	🟨
	Anadromous Fish	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟥	🟥	🟥	🟥	🟥	🟥
North San Pablo Bay, Napa & Petaluma Rivers	Sacramento Splittail (Juveniles)	🟩	🟩	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
San Pablo Bay	Longfin Smelt	🟩	🟩	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
San Pablo & North SF Bay shallow berthing areas	Dungeness Crab	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟡	🟡	🟡	🟡	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
San Pablo Bay & South SF Bay	Snowy Plover	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨
Central SF Bay, Richardson Bay, & North South Bay	Pacific Herring	🟡	🟡	🟡	🟡	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟡	🟡
1 mile of coast Berkeley Marina to San Lorenzo Creek	California Least Tern	🟩	🟩	🟩	🟩	🟩	🟩	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
South of Highway 92 Bridge (San Mateo-Hayward)	California Least Tern	🟩	🟩	🟩	🟩	🟩	🟩	🟨	🟨 Conflict with BO & Appendix J	🟨	🟨	🟨 ?	🟨	🟨	🟨	🟨	🟨	🟨	🟩	🟩	🟩	🟩	🟩	🟩	🟩
Throughout Area Habitat Loss	California Clapper Rail	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨
Throughout Area Disturbance	California Clapper Rail	🟩	🟩	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
Eelgrass Beds	California Least Tern	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨	🟨
Within 300' of known roost site	California Brown Pelican	🟩 Disposal in 4 Jan 99 draft Not dredging	🟩	🟩	🟩	🟩	🟩	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟩	🟩
Throughout Area w/ 250' vegetation	Salt Marsh Harvest Mouse	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡

🟥 **No dredging**

🟡 **Consultation required**

🟩 **No restrictions**

Dredging environmental windows by

Issues Affecting the SPD Region

Re-Programming in O&M

Overdredging

Environmental window impacts on dredging and disposal.

Water quality impacts on dredging and disposal methodologies.

Contaminated sediments dredging and disposal.

Costs of doing business is escalating rapidly.

Level of Service – expectations by the customer.

Future Port Requirements – Can we respond in a

Navigation
Where We Are Going

- Dredging of high use harbors must continue
- Partnering to solve dredging and disposal issues
    - LTMS, LA Region Contaminated Sediments Task Force, Coastal Sediment Management Workgroup
- Partnering benefits
    - promotes beneficial re-use of dredged materials
    - streamlined dredging permit process
- Impacts to costs
    - reduced contaminated material disposal costs
    - ocean disposal / beneficial re-use (100% increase), monitoring (30% to 50% increase), design costs increase
    - continue to strive for efficiencies and improvements

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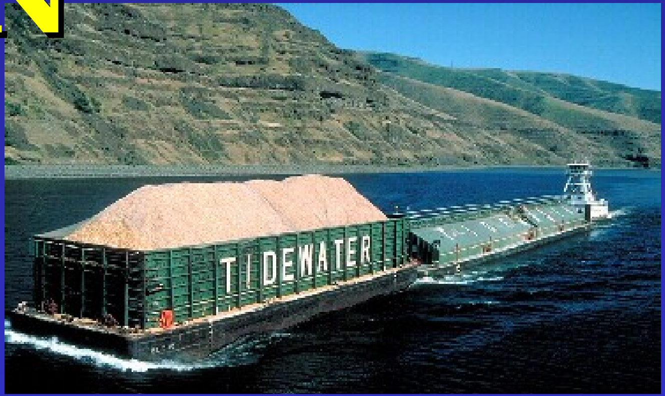
of Engineers

NORTHWESTERN DIVISION

SHOALHUNTER



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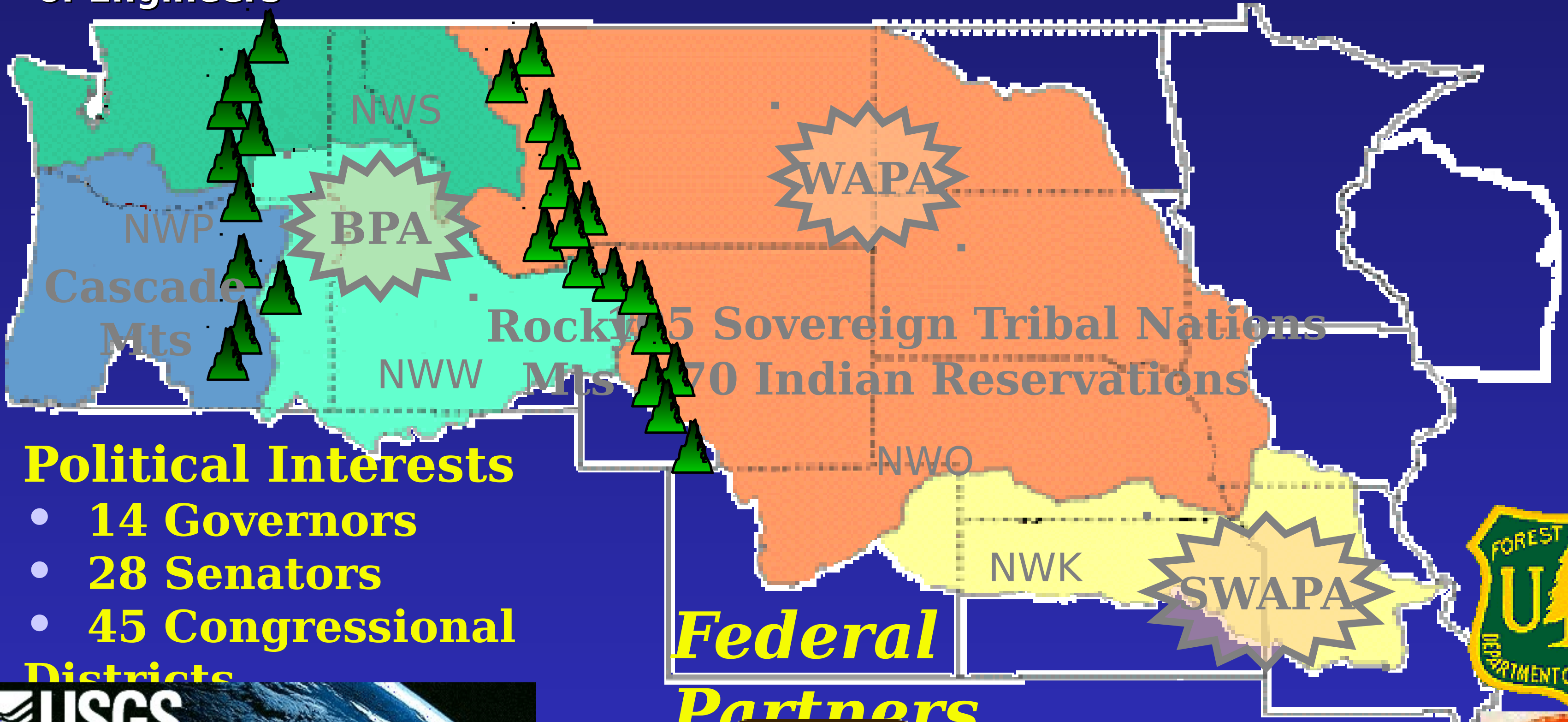
Regional Interface



5 Sovereign Tribal Nations
70 Indian Reservations

Political Interests

- 14 Governors
- 28 Senators
- 45 Congressional Districts

Federal Partners

USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

UNITED STATES OF AMERICA
1892
BUREAU OF INDIAN AFFAIRS

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

Bonneville
Power Administration

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

FOREST SERVICE
U S
DEPARTMENT OF AGRICULTURE

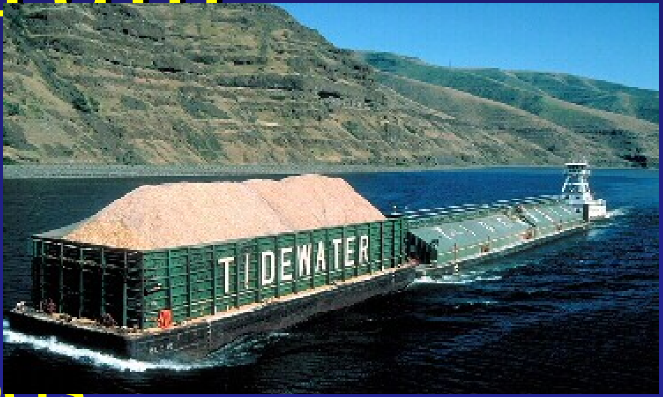
NATIONAL PARK SERVICE

EPA United States Environmental Protection Agency

US Army Corps
of Engineers

NWD Navigation Program

- 1724 Miles Inland Navigation
- 22 Deep Draft Harbors
- 20 Shallow Draft Harbors



- 10 Locks
- 16 Lock Chambers
- 7500 Dikes/Revetments
- 39 Miles Breakwaters & Jetties

- 2 Dredges
- Survey Boats
- 212 Work Boats
- U.S. Moorings
- Contract Dredging/Surveying

FY 2006
Major Contract Work

- Columbia River Channel Improvement Project
    - Dredging, no rock
    - Mouth of Columbia River Interim Jetty Repair
    - South Jetty Interim Repair, 2-yr project major rehab in out years.
- Snake River Dredging Completed

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REGIONAL INITIATIVES

- REGIONAL DREDGING TEAM (RDT)
- REGIONAL SEDIMENT EVALUATION TEAM (RSET)
- REGIONAL SEDIMENT MANAGEMENT (RSM)
- REGIONAL DREDGING CONTRACT

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OBJECTIVES OF ALL COLLABORATIVE REGIONAL EFFORTS

CAPITALIZE ON POTENTIAL ECONOMIC BENEFITS

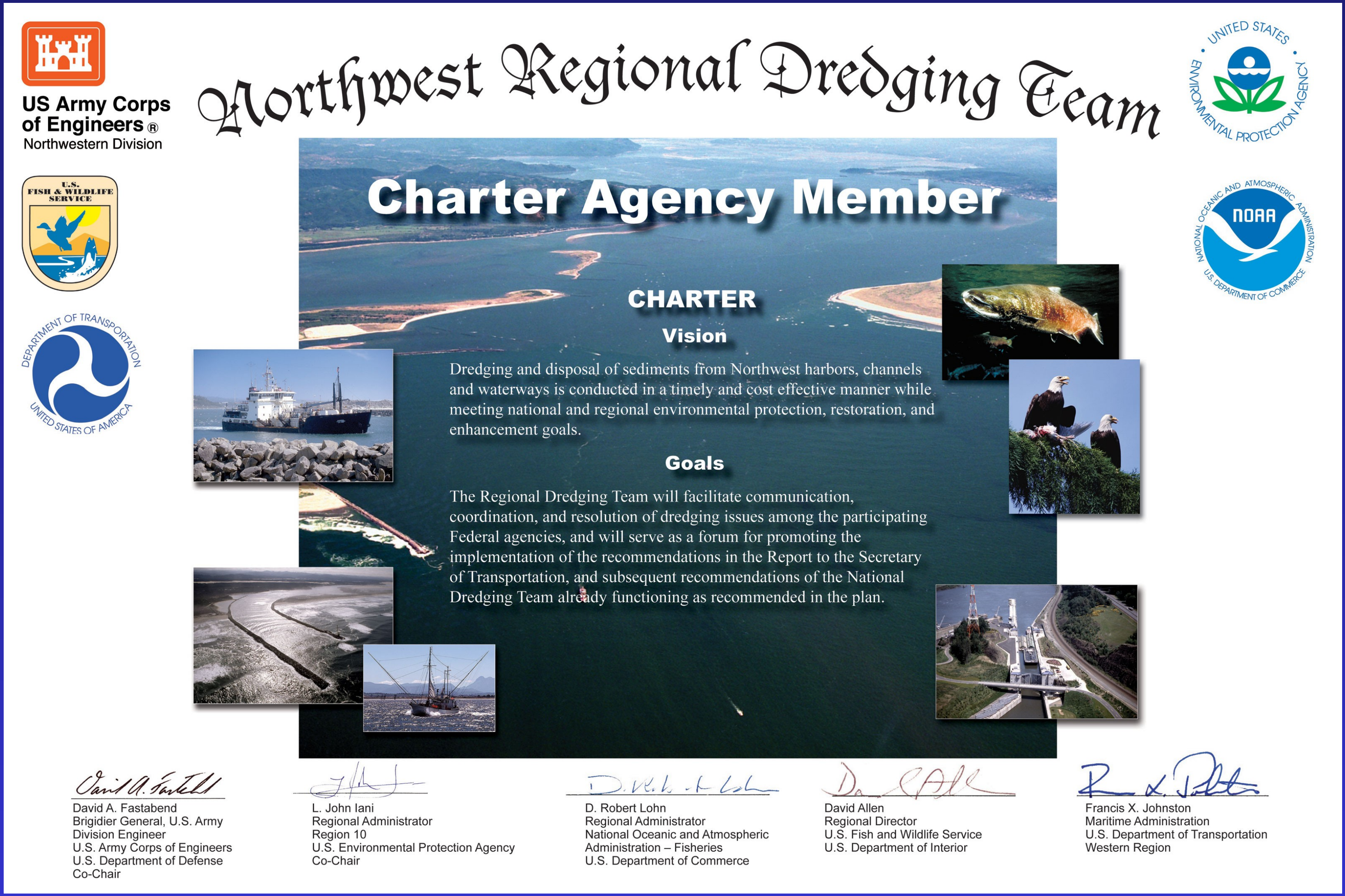
ID AND ELIMINATE BUREACRATIC OBSTACLES

IMPROVE RELATIONS WITH PARTNERS

RESTORE AND MAINTAIN THE NATURAL SYSTEM

REGIONAL DREDGING TEAM

US Army Corps
of Engineers



US Army Corps
of Engineers®
Northwestern Division

Northwest Regional Dredging Team

Charter Agency Member

CHARTER

Vision

Dredging and disposal of sediments from Northwest harbors, channels and waterways is conducted in a timely and cost effective manner while meeting national and regional environmental protection, restoration, and enhancement goals.

Goals

The Regional Dredging Team will facilitate communication, coordination, and resolution of dredging issues among the participating Federal agencies, and will serve as a forum for promoting the implementation of the recommendations in the Report to the Secretary of Transportation, and subsequent recommendations of the National Dredging Team already functioning as recommended in the plan.

David A. Fastabend
Brigidier General, U.S. Army
Division Engineer
U.S. Army Corps of Engineers
U.S. Department of Defense
Co-Chair

L. John Iani
Regional Administrator
Region 10
U.S. Environmental Protection Agency
Co-Chair

D. Robert Lohn
Regional Administrator
National Oceanic and Atmospheric
Administration – Fisheries
U.S. Department of Commerce

David Allen
Regional Director
U.S. Fish and Wildlife Service
U.S. Department of Interior

Francis X. Johnston
Maritime Administration
U.S. Department of Transportation
Western Region

US Army Corps
of Engineers

REGIONAL DREDGING TEAM

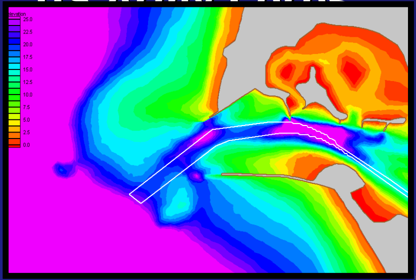
VISION

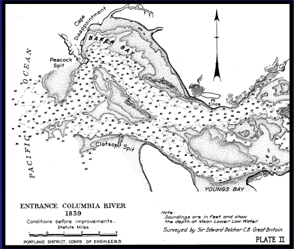
Dredging in Northwest harbors, channels, and waterways is conducted in a timely and cost effective manner while meeting national and regional environmental protection/restoration/enhancem

Regional Sediment Management

Mouth of the Columbia River, OR and WA

US Army Corps




Cape Disappointment
BAKER BAY
Peacock Spit
PACIFIC OCEAN
Pt. Ellice
Clatsop Spit
YOUNGS BAY
Statute Miles
1
0
1
2
3
4

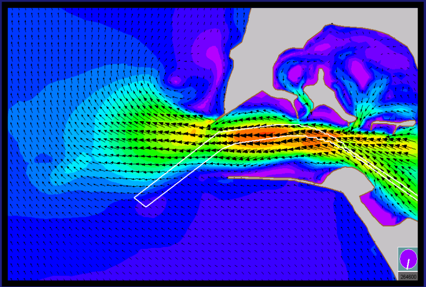
ENTRANCE COLUMBIA RIVER
1839
Conditions before improvements.

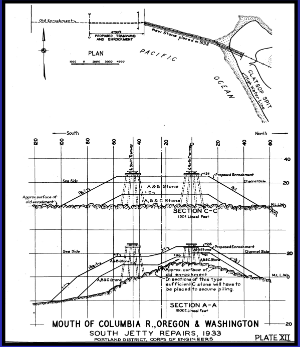
PORTLAND DISTRICT, CORPS OF ENGINEERS

Note:
Soundings are in feet and show the depth at Mean Lower Low Water.

Surveyed by Sir Edward Belcher C.B. Great Britain

PLATE II





MOUTH OF COLUMBIA R., OREGON & WASHINGTON
SOUTH JETTY REPAIRS, 1933
PORTLAND DISTRICT, CORPS OF ENGINEERS

PLATE XII

Oregon and Washington,
USA

Regional Sediment Management Activities

- Mouth of the Columbia R Littoral Cell
  - HQ RSM Funded from 2003-2005
  - 2005 work – Mega-transect data collection
  - 2006 – Regional March Workshop presented all work
- SW Washington Littoral Drift Restoration, 2005 and 2006 Congressional Addition
  - Placement Authority Required
- Nearshore Beneficial Use Site South of the South Jetty (LCSG)
  - 2006 Congressional Addition
  - Placement within cost of the MCR Project

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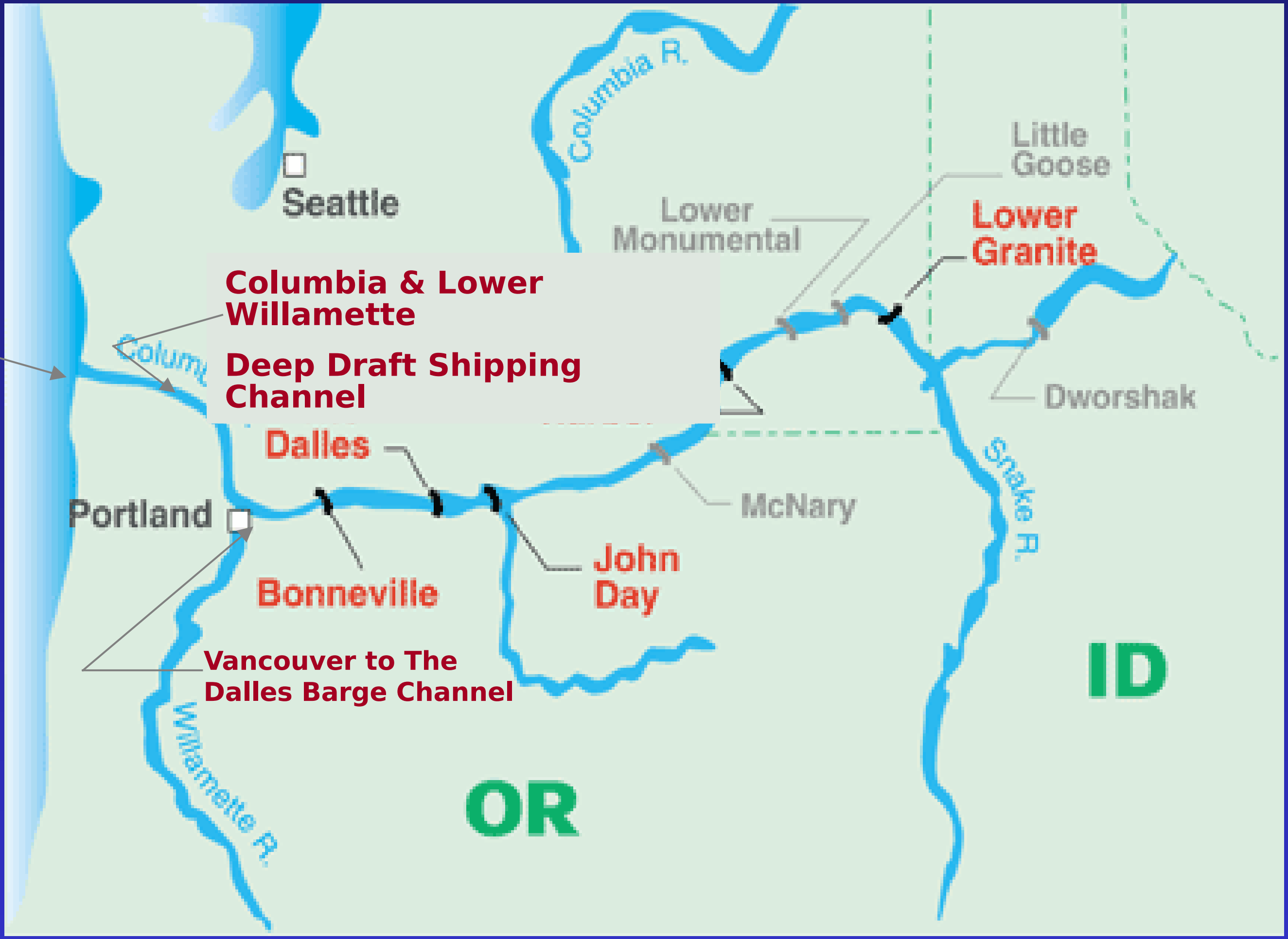
Columbia Snake River System Federal

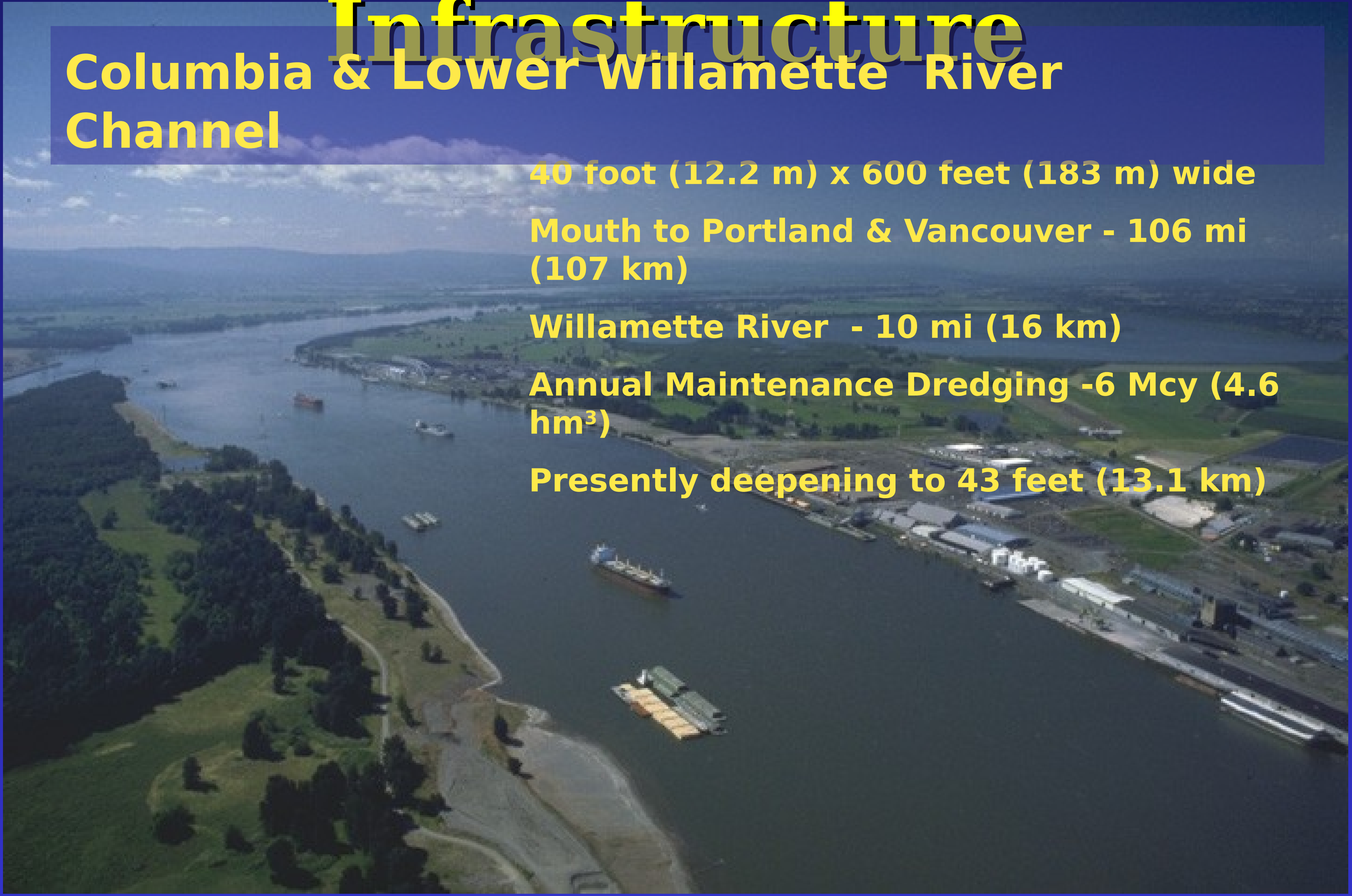

Columbia R.
Seattle
Little Goose
Lower Monumental
Lower Granite
Columbia
Dworshak
Dalles
Portland
McNary
John Day
Bonneville
Snake R.
ID
Willamette R.
OR

MCR Jetties & Entrance Channel

Columbia & Lower Willamette Deep Draft Shipping Channel

Vancouver to The Dalles Barge Channel

Federal Infrastructure



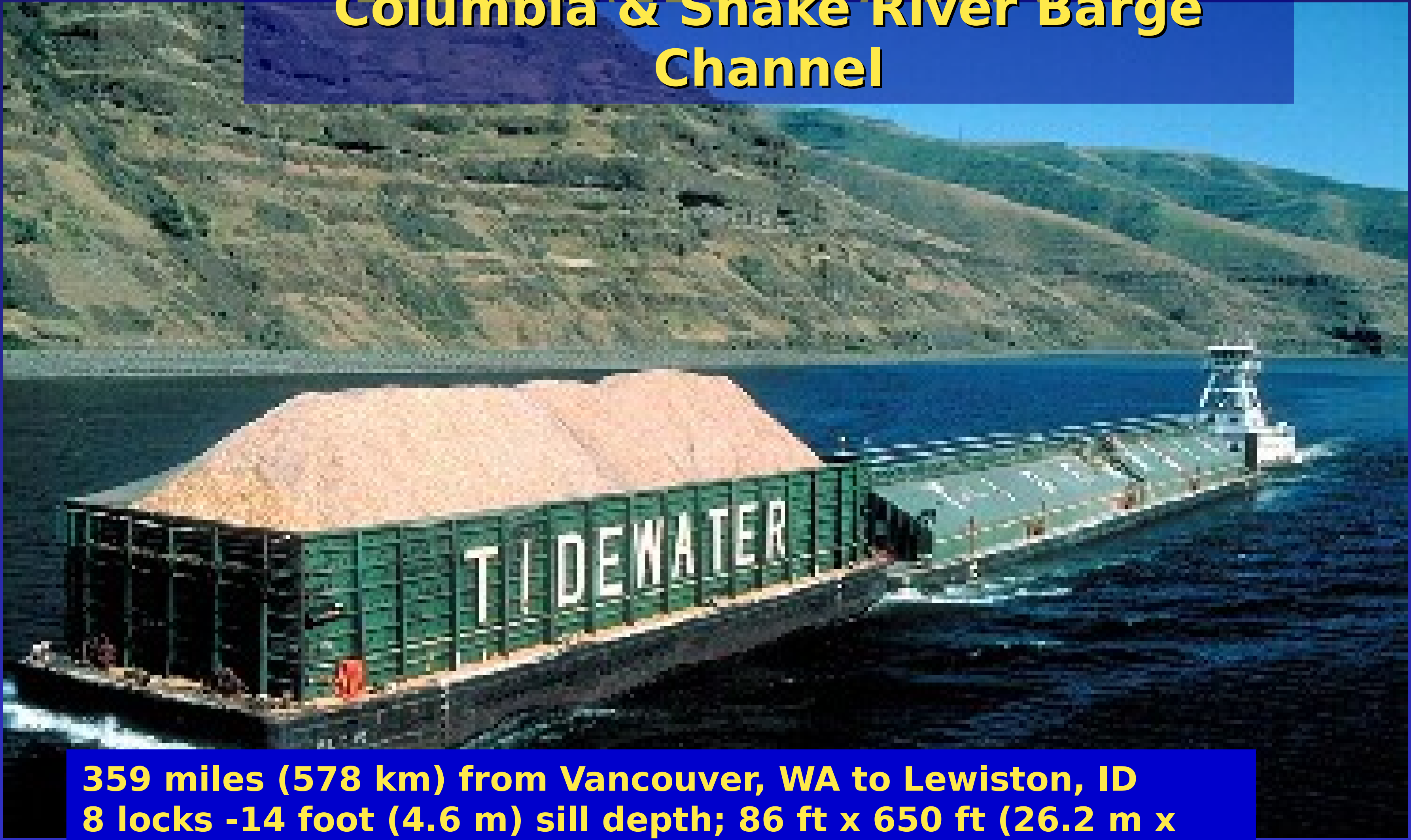
Columbia & Lower Willamette River Channel

- 40 foot (12.2 m) x 600 feet (183 m) wide
- Mouth to Portland & Vancouver - 106 mi (107 km)
- Willamette River - 10 mi (16 km)
- Annual Maintenance Dredging -6 Mcy (4.6 hm^3)
- Presently deepening to 43 feet (13.1 km)

US Army Corps

Federal Infrastructure

Columbia & Snake River Barge Channel



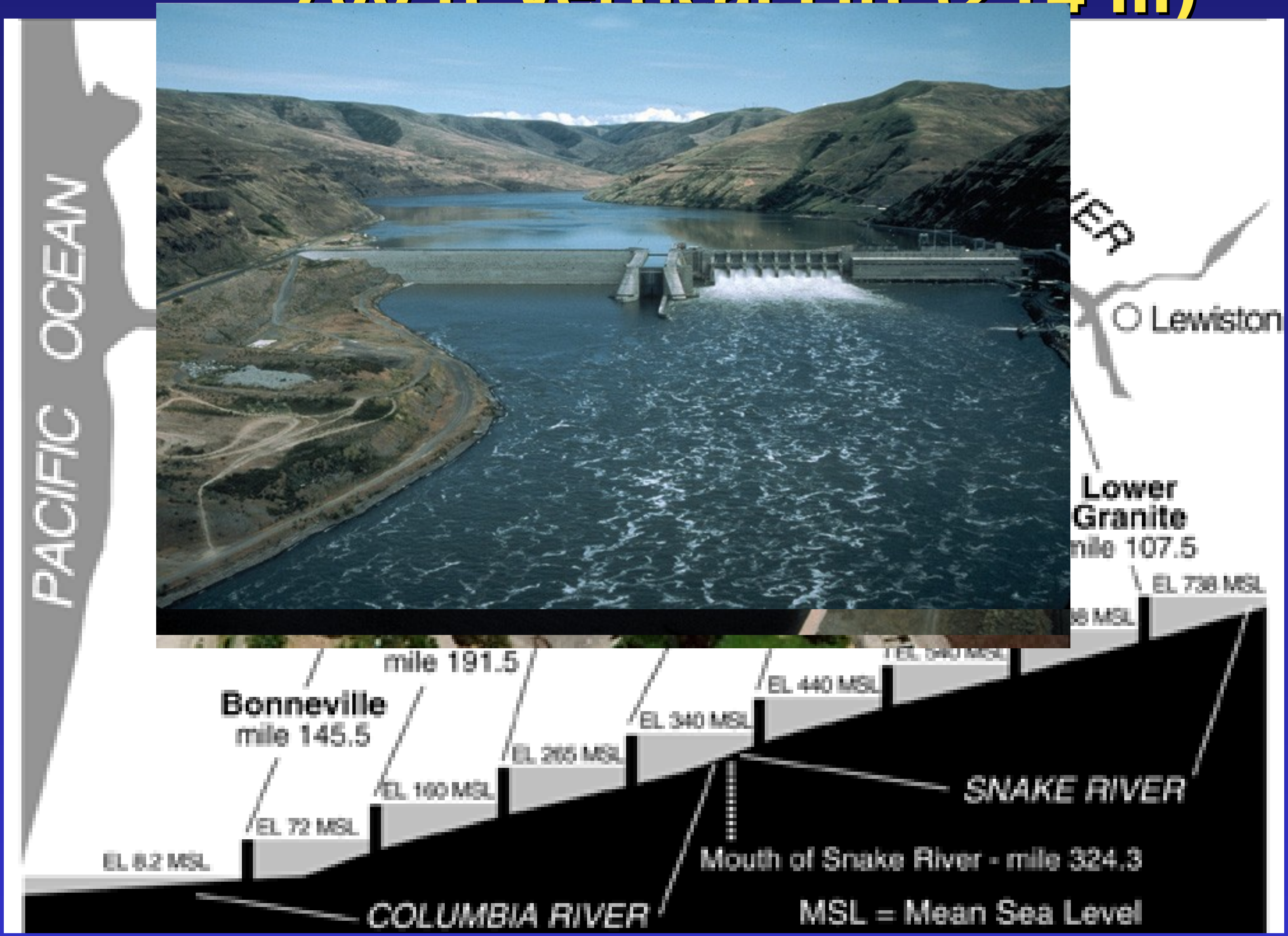
359 miles (578 km) from Vancouver, WA to Lewiston, ID
8 locks -14 foot (4.6 m) sill depth; 86 ft x 650 ft (26.2 m x 198.1 m
Annual Dredging 200 kcy (15.3 dam³)

US Army Corps of Engineers

Federal Infrastructure

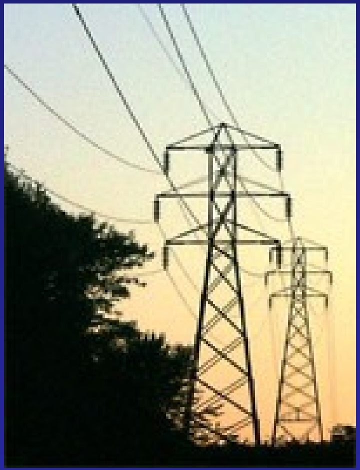
8 Locks through Multipurpose Dams

700 ft Vertical Lift (214 m)


PACIFIC OCEAN
Lewiston
Lower Granite
107.5
EL 738 MSL
mile 191.5
Bonneville
mile 145.5
EL 440 MSL
EL 340 MSL
EL 265 MSL
EL 160 MSL
EL 72 MSL
EL 8.2 MSL
SNAKE RIVER
Mouth of Snake River - mile 324.3
COLUMBIA RIVER
MSL = Mean Sea Level

US Army Corps
of Engineers

Columbia Snake River Dams
8 Multipurpose



Power –Generation Cap. 10.3 MWatt

Navigation – 359 mi of barge channel

Flood Control - 534,000 AF

Irrigation –6.5 MAc land (26,304 km²)

Recreation – Over 100 Camps, Parks & Recreational Facilities

Environmental – Fish Passage Facilities

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of Engineers

Environmental Challenges

Dredging & Disposal Restrictions due to ESA fish in the Columbia – Snake River System

- **Lower Columbia Deep Draft Channel: Operational, Disposal, Timing**
- **Shallow Barge Channel: Operational, Timing, Delays;**
- **Snake River Dredging Delayed 3 years**

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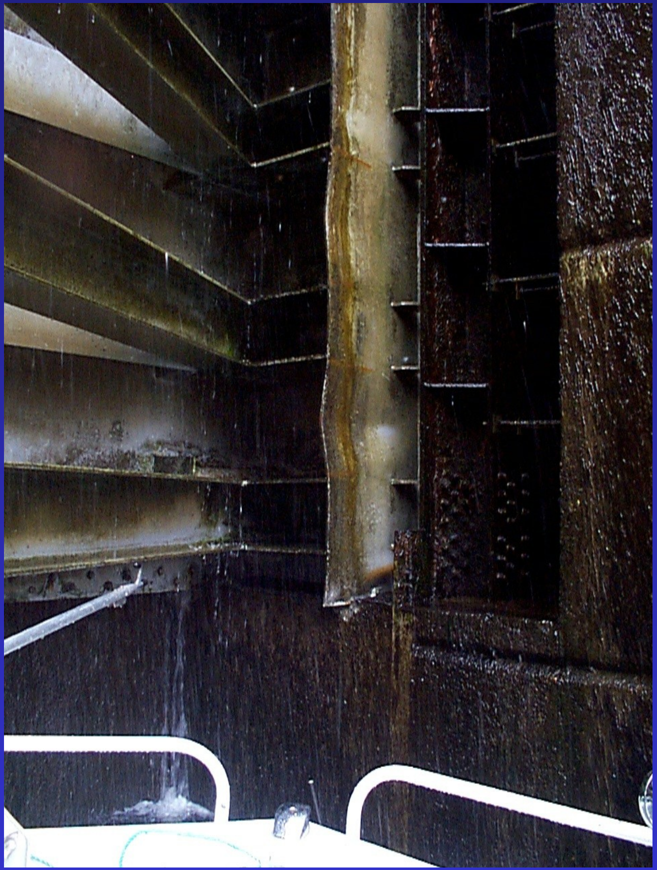
of Engineers

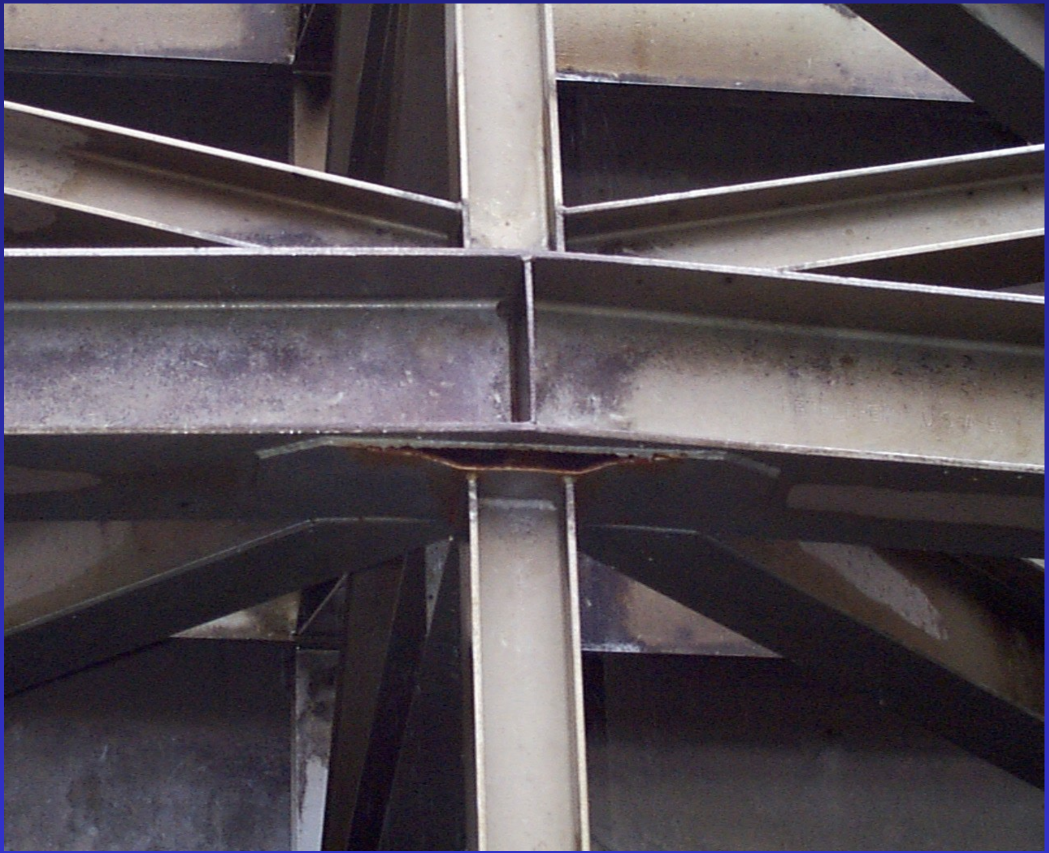
UPSTREAM GATE REPAIR

Lock Gate Damage

Gate Guide Buckled



Buckled Beams



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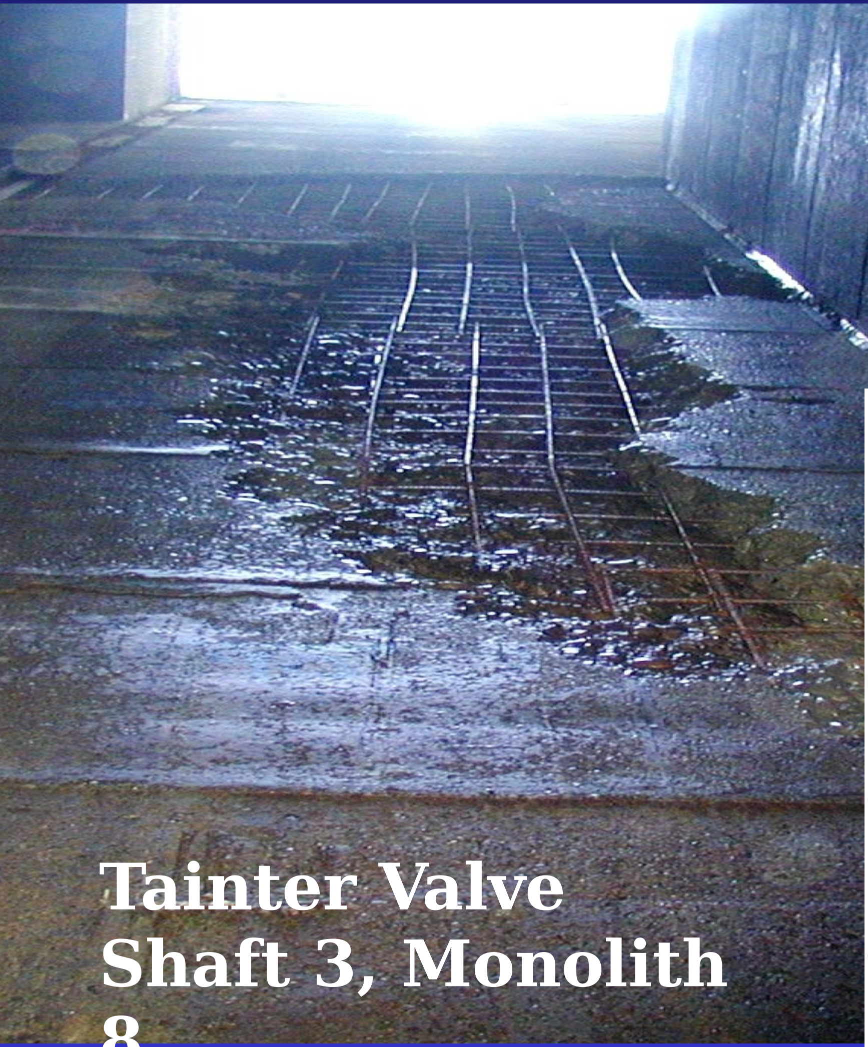
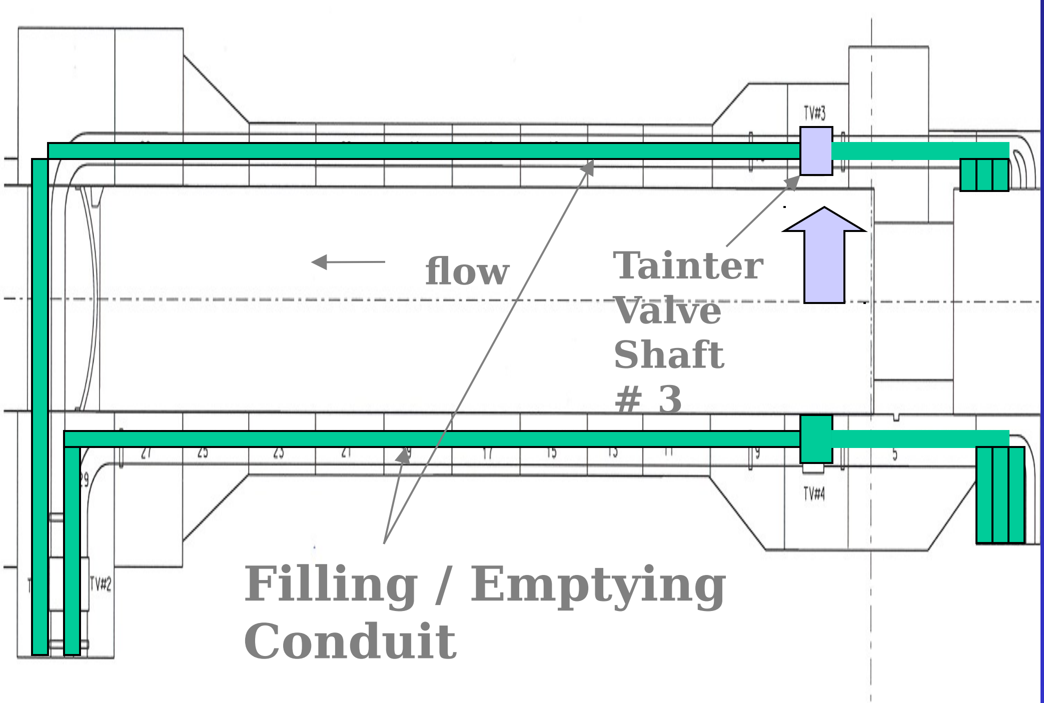
EMERGENCY REPAIRS

Navigation Lock



Tainter Valve Shaft 3, Monolith 8



Tainter Valve Shaft # 3

Filling / Emptying Conduit

Challenges

Columbia Snake River System

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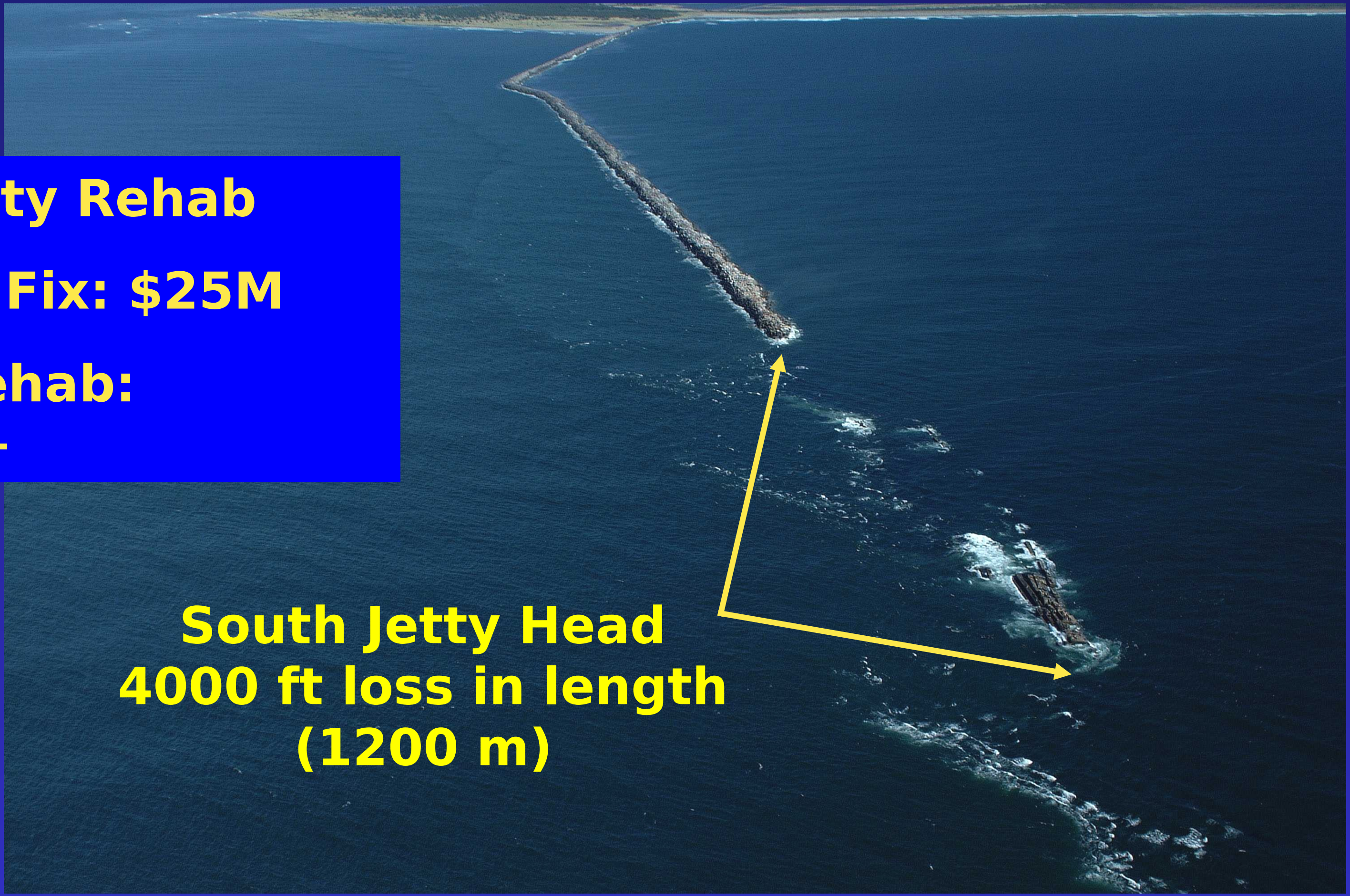
MCR Jetty Rehab

Interim Fix: $25M

Total Rehab: $100M+



South Jetty Head
4000 ft loss in length
(1200 m)

Infrastructure Challenges
Unplanned Expenditures

2003 – Coos Bay Jetty Breach – Emergency Winter Interim Repair Final Repair Est.: $20M

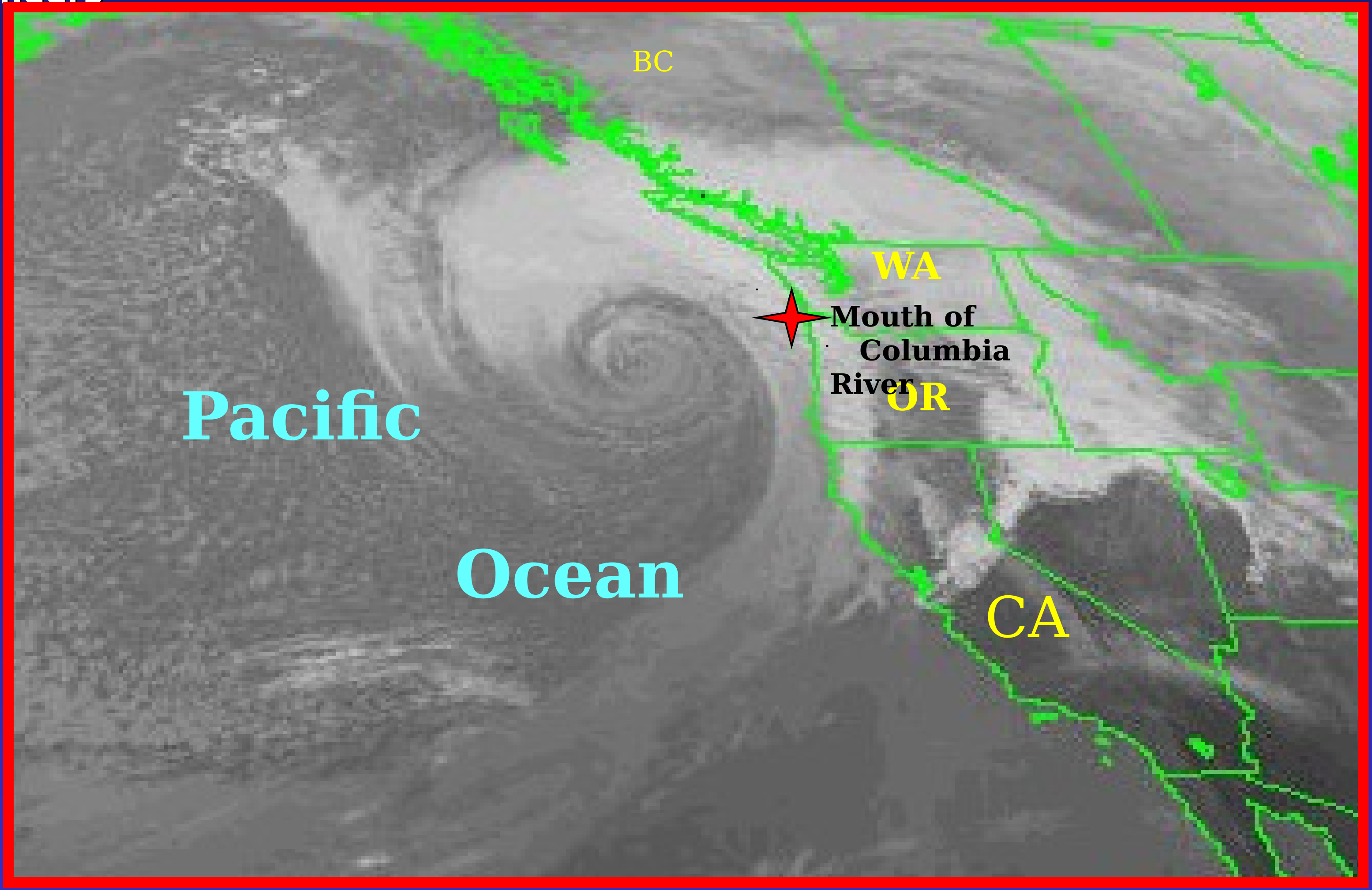
2003 / 2004 – John Day Lock Failure – Emergency Repair to U/S Gate, Foundation, and Monolith - $16M

2005 Fern Ridge Dam – Active Failure Emergency Repairs

US Army Corps of Engineers ®
Portland District

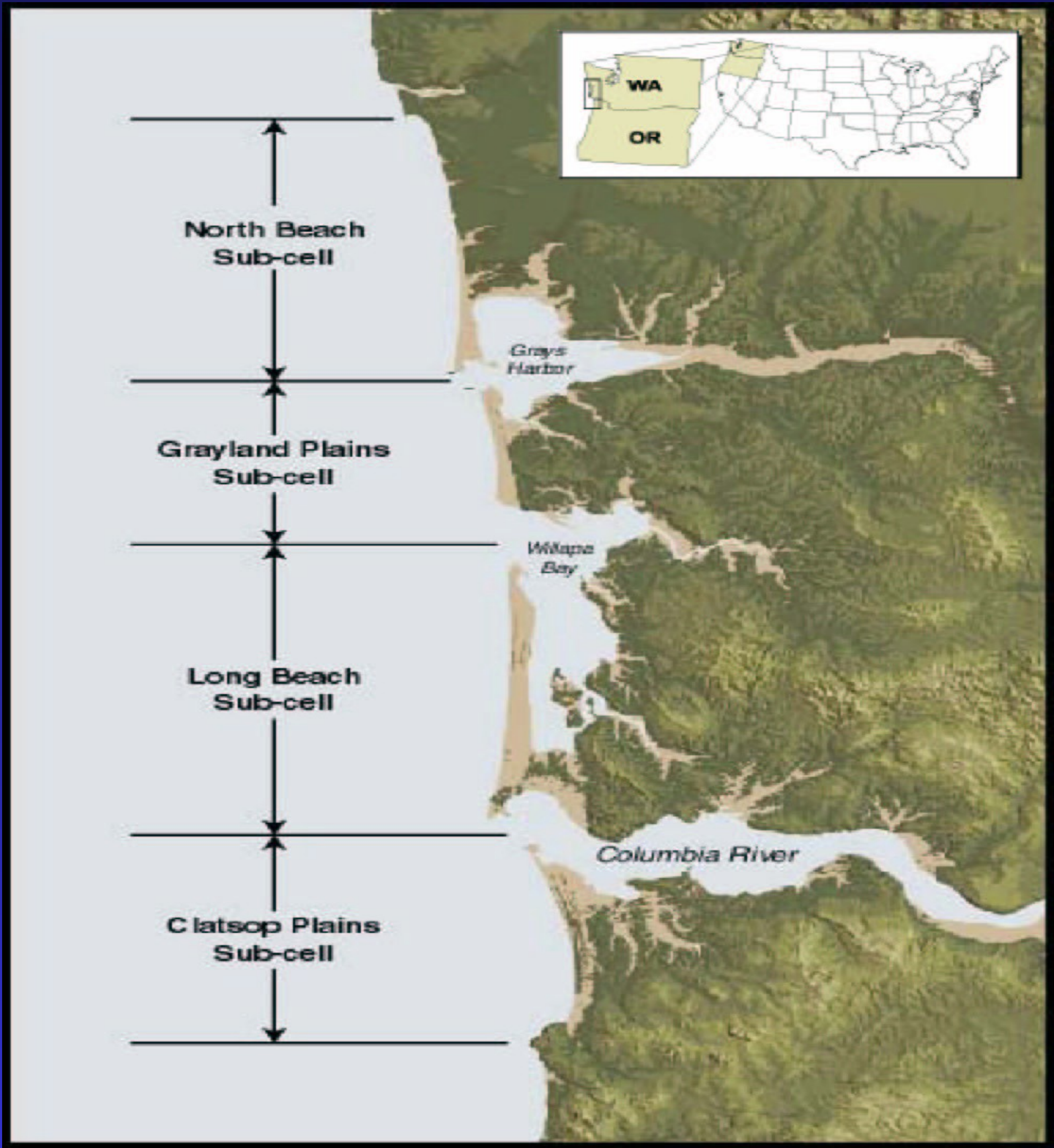
US Army Corps of Engineers

Pacific Coast of United States


BC
WA
Mouth of Columbia River
OR
Pacific
Ocean
CA

US Army Corps
of Engineers

MCR Littoral Cell off the Oregon and Washington Coasts


WA
OR
North Beach Sub-cell
Grays Harbor
Grayland Plains Sub-cell
Willapa Bay
Long Beach Sub-cell
Columbia River
Clatsop Plains Sub-cell

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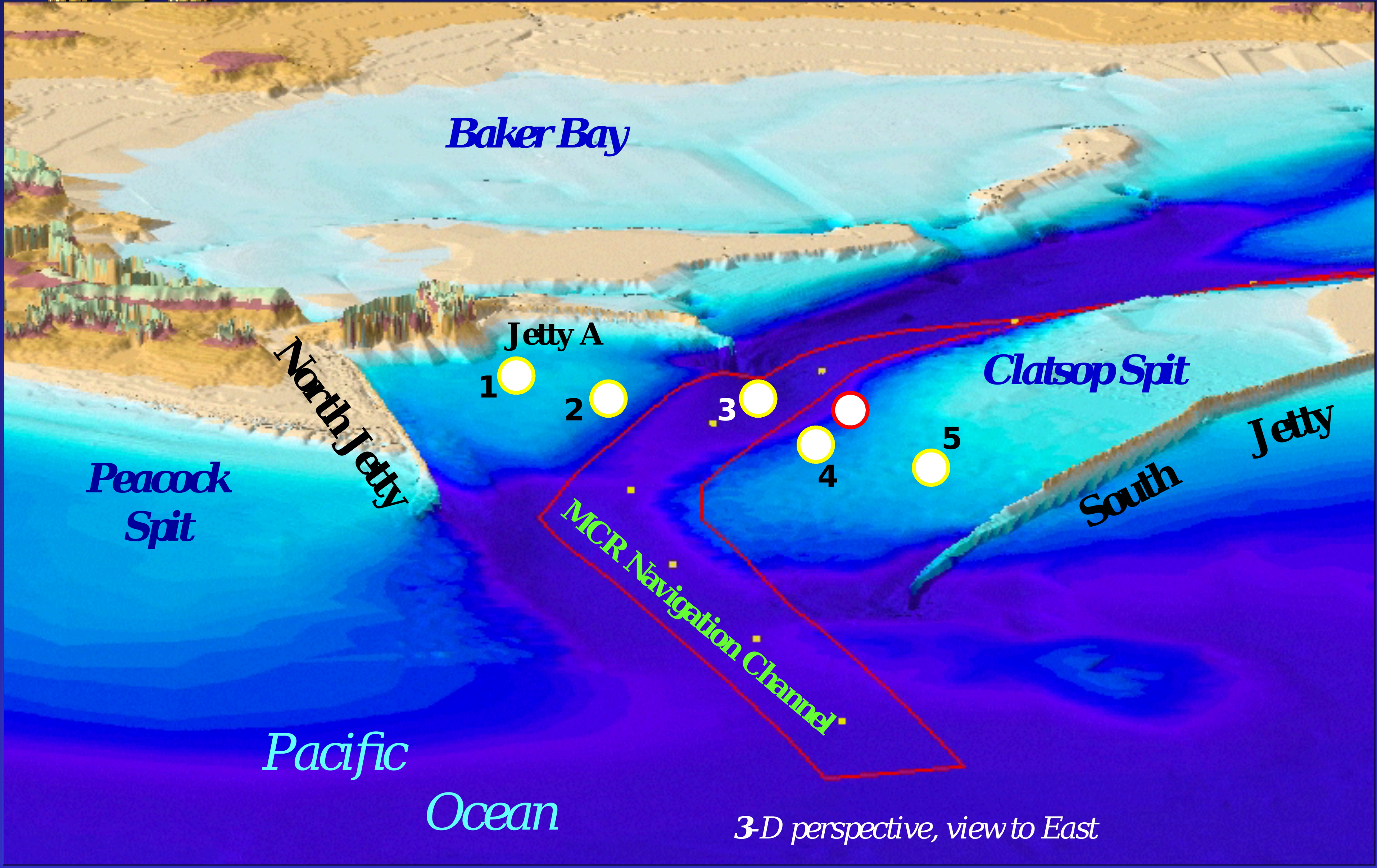
of Engineers

MCR LITTORAL CELL RSM MEGA-TRANSECT

- Purpose: Collect wave, currents, suspended-bedload sediment, CTD, and tide between the MCR and C&LW and use data to feed existing models for better understanding of MCR sediment movement
- Rod Moritz, Corps Lead
- Guy Gelfenbaum, USGS – Menlo Park
- ERDC – Nick Krause
- Moffatt-Nichol
- Evans-Hamilton

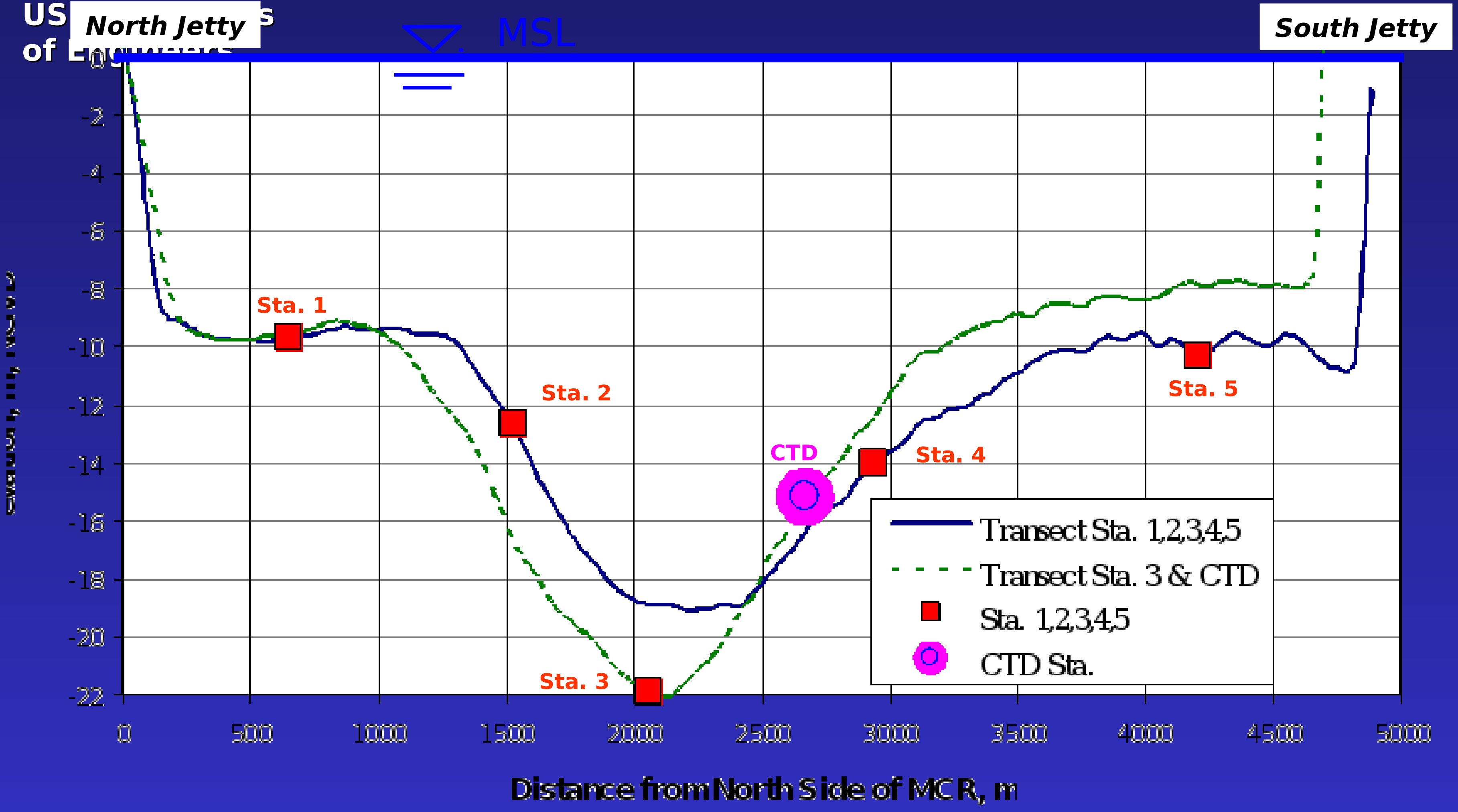
MEGA-TRANSECT DATA COLLECTION at MCR Entrance 2 miles wi


Baker Bay
Jetty A
1
2
3
4
5
North Jetty
Clatsop Spit
South Jetty
Peacock Spit
MCR Navigation Channel
Pacific Ocean

3-D perspective, view to East

Understand Sediment Transport Dynamics at MCR: Continuously Sample Waves, Currents, Sediment
Temperature, Salinity

Cross-Section View Across MCR along Mega-Transect Area



View Upstream, Toward East

US Army Corps
of Engineers

Littoral Drift Restoration , SW Washington
Stakeholders: Coastal Communities
Similar Project to Benson

002 P

US Army Corps
of Engineers

SW WASHINGTON LITTORAL DRIFT RESTORATION (BENSON BEACH) RSM

PURPOSE – Restore material to the littoral drift along the Washington Coast

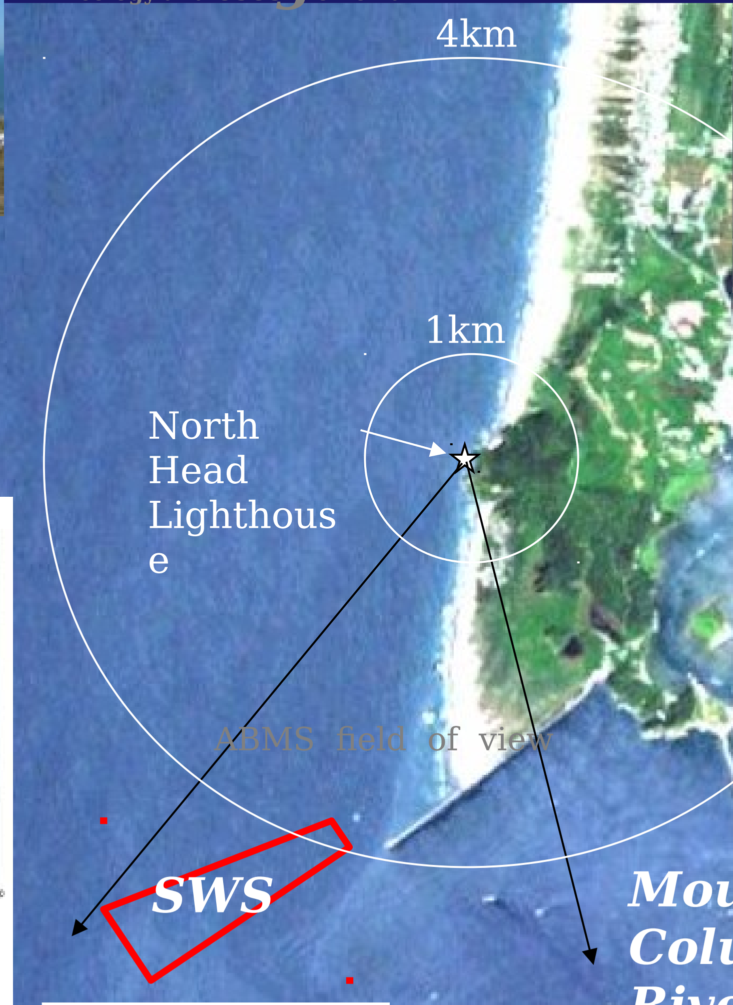
- **2006 WORK**
  - **ARGUS CAMERA DATA COLLECTION**
  - **LONG TERM ENVIRONMENTAL CLEARANCES**
  - **INDEPENDENT TECHNICAL REVIEW**
  - **FUNDS EXCESS TO THIS YEAR’S NEEDS ARE PROGRAMMED FOR FY2007**

Argus Beach Monitoring at North Head, Washington

Contractor: NorthWest Research Associates (NWRA), with support from Washington Dept. of Ecology and USGS Menlo Park

ABMS cameras installed within North Head lighthouse

Pacific Ocean

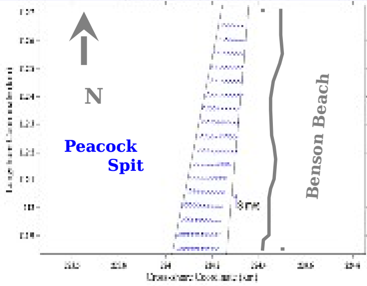

4km
1km
North Head Lighthouse
ABMS field of view
SWS
Mouth of Columbia River

North Jetty, 25 ft high
Benson Beach
Low Tide

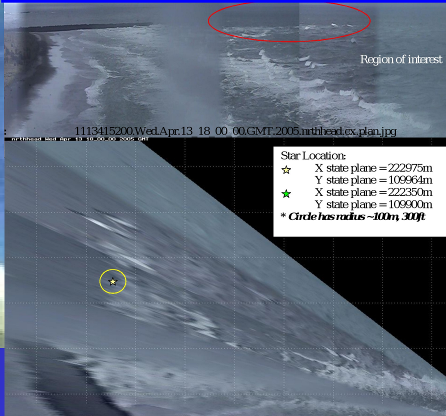
Intertidal Zone Surf\Swash Dynamics

25 ft wave
High Tide

Surface Current Estimate Using ARGUS Imagery



Mapping of Breaking Waves


Region of interest
1113415200.Wed.Apr.13_18_00_00.GMT.2005.nrthhead.cx.plan.jpg
nrthhead Wed Apr 13 18_00_00 2005 GMT

Star Location:

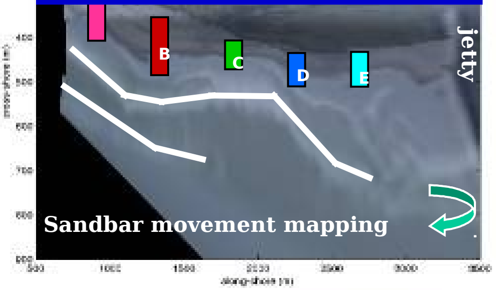
☆ X state plane = 222975m
Y state plane = 109964m

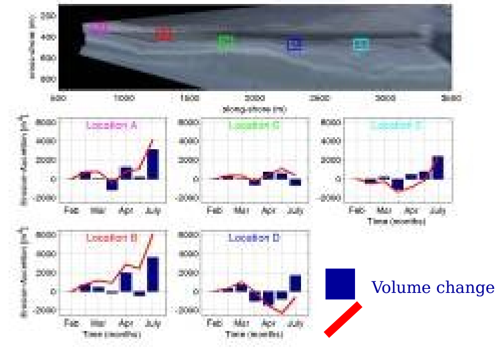
★ X state plane = 222350m
Y state plane = 109900m

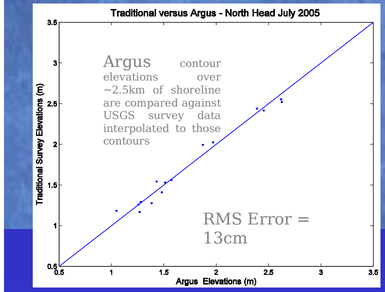
* ***Circle has radius ~100m, 300ft***

Locations of Intertidal Volume Change Calculations

100m-wide cross-sections from MSL to MHHW

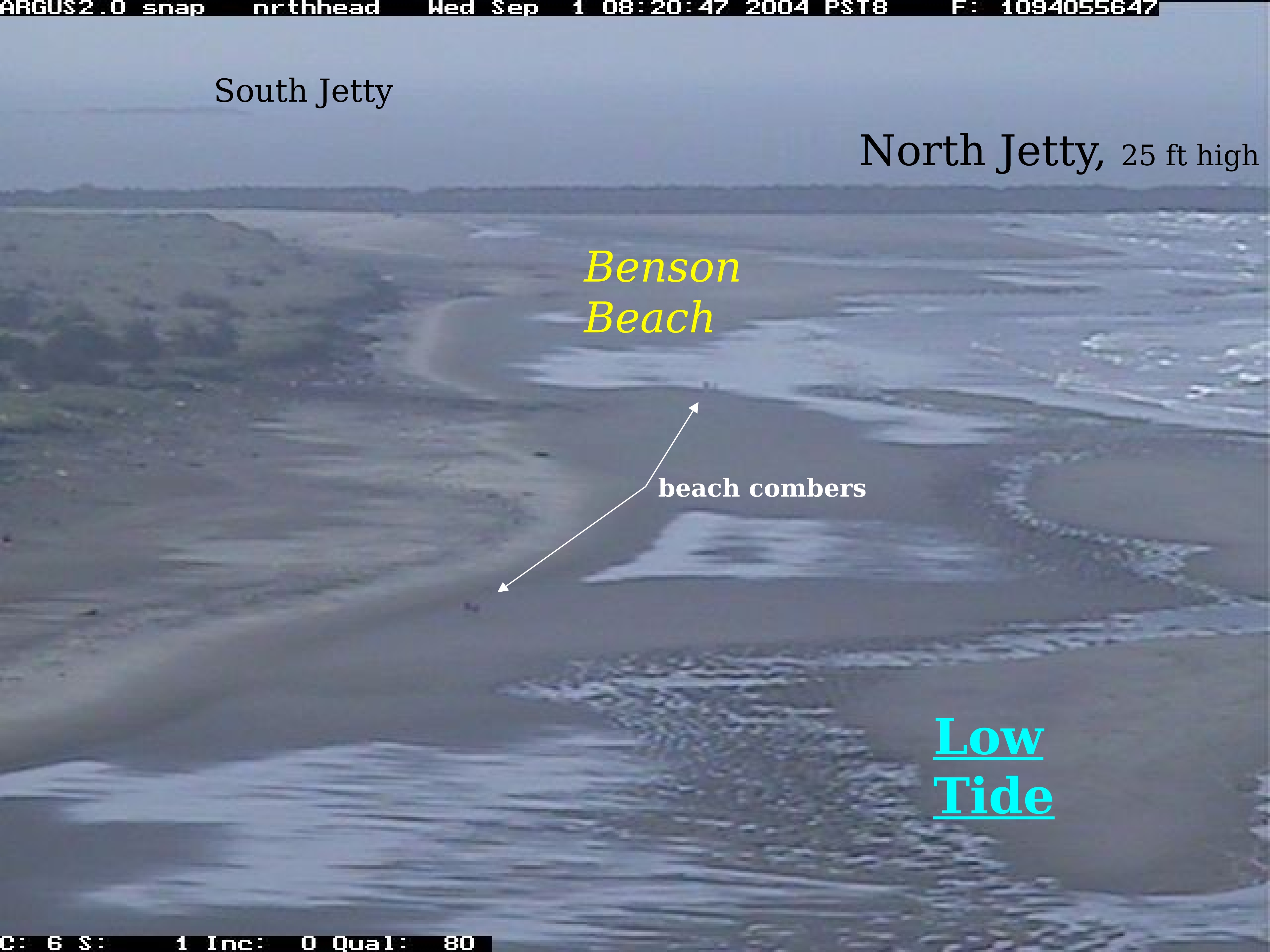

B
C
D
E
jetty
Sandbar movement mapping

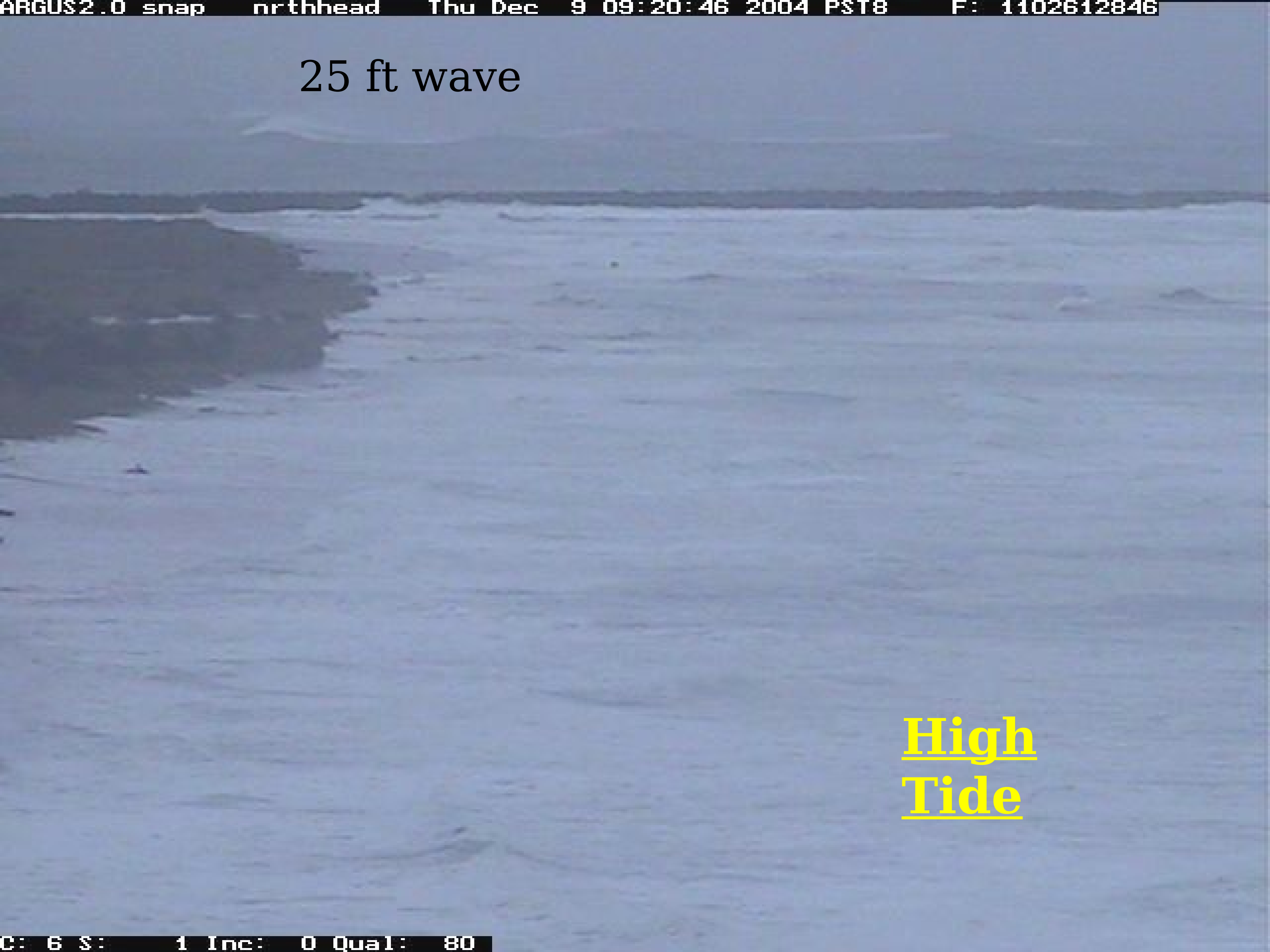




Argus contour elevations over ~2.5km of shoreline are compared against USGS survey data interpolated to those contours

RMS Error = 13cm


ARGUS2.0 snap nrthhead Wed Sep 1 08:20:47 2004 PST8 F: 1094055647
South Jetty
North Jetty, 25 ft high
Benson Beach
beach combers
Low Tide
C: 6 S: 1 Inc: 0 Qual: 80


ARGUS2.0 snap nrthhead Thu Dec 9 09:20:46 2004 PST8 F: 1102612846
C: 6 S: 1 Inc: 0 Qual: 80

25 ft wave

High
Tide

US Army Corps
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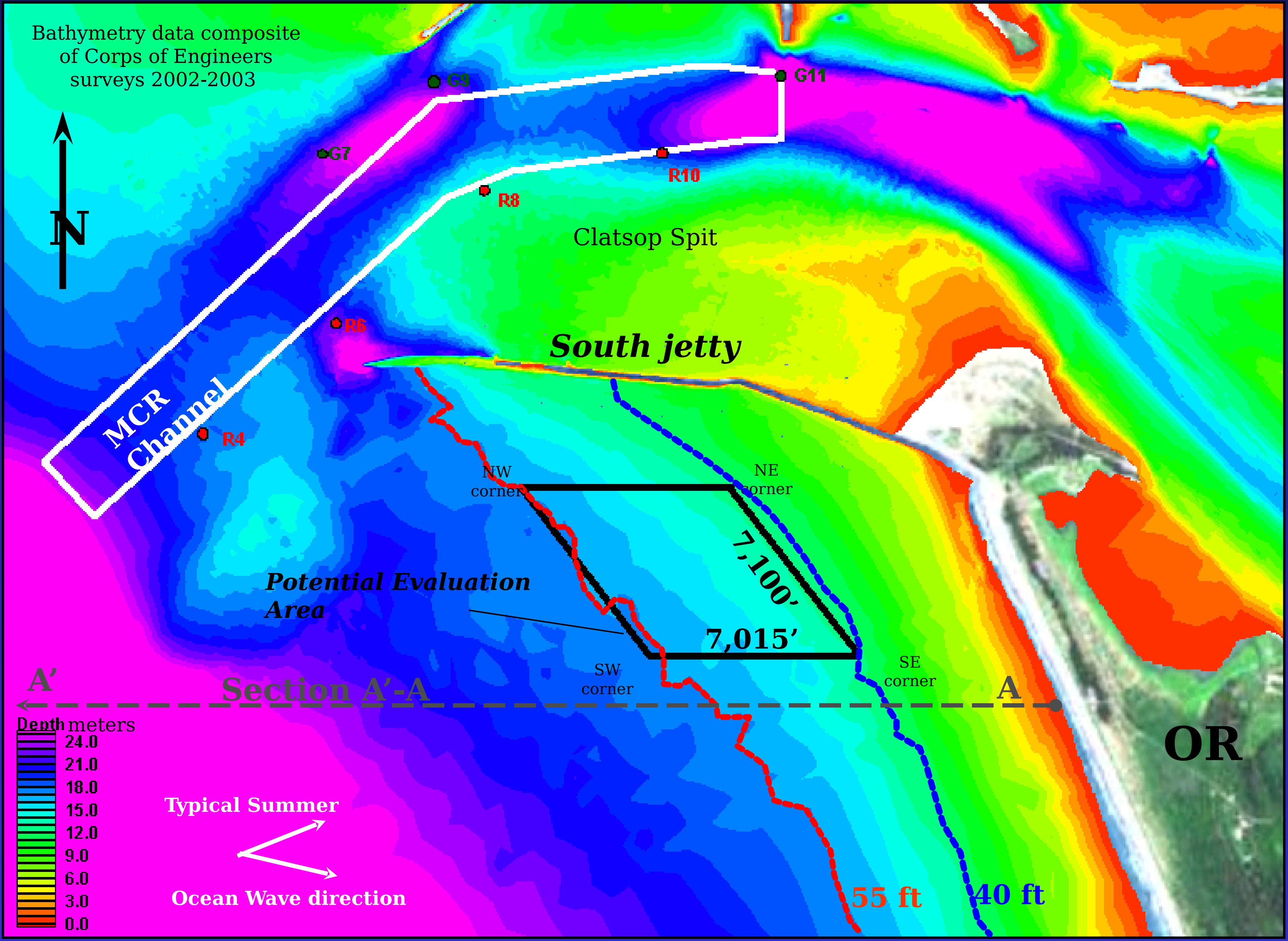
Nearshore Beneficial Use Site – S of S Jetty Stakeholders– Lower Columbia Solutions Group Members

- Port of Astoria
- OR DLCD
- OR DSL
- OR DOGAMI
- Columbia River Channel Coalition
- Corps - RSM
- Port of Portland
- Port of Longview
- Port of Vancouver
- Port of Kalama
- Oregon Sea Grant
- Corps – MCR Project

SOUTH JETTY, CLATSOP SPIT OR RSM

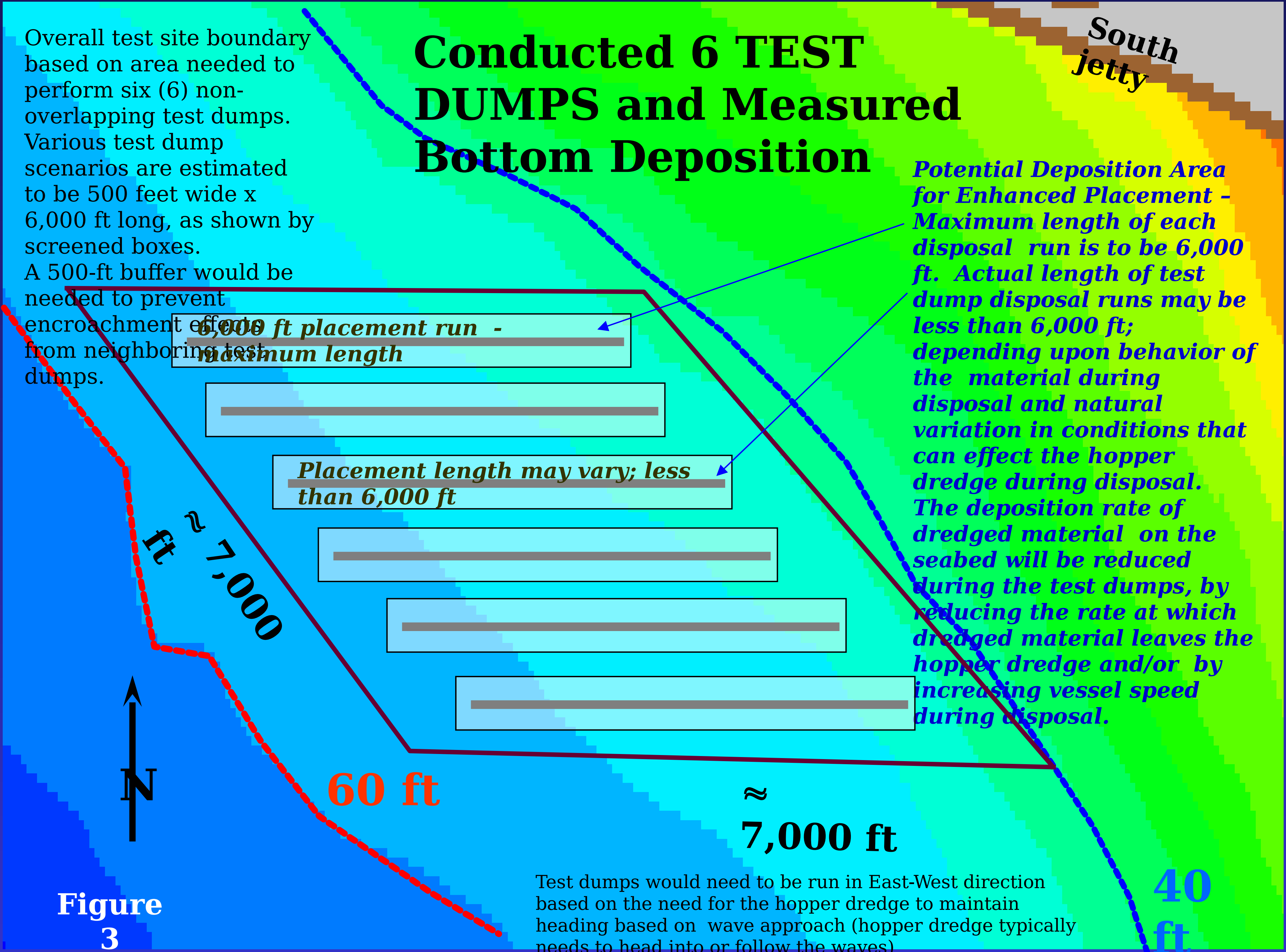
- Purpose: Protect the South Jetty from adverse wave conditions
- FY 2005 – 35,000 cyds placed via Corps Hopper Dredge for a research project with monitoring funded by 11 groups including RSM (EPA Section 102 permit)
- FY2006 – Congressional addition under RSM for razor clam study and wave and sediment fate modeling to increase understanding as group prepares for larger project.


Bathymetry data composite
of Corps of Engineers
surveys 2002-2003
N
G9
G11
G7
R10
R8
Clatsop Spit
R6
South jetty
MCR
Channel
R4
NW
corner
NE
corner
7,100’
Potential Evaluation
Area
7,015’
SW
corner
SE
corner
A’
Section A’-A
A
OR
Depth meters
24.0
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0.0
Typical Summer
Ocean Wave direction
55 ft
40 ft

“Nearshore Beneficial Use South of S Jetty Site”

Conducted 6 TEST DUMPS and Measured Bottom Deposition

Overall test site boundary based on area needed to perform six (6) non-overlapping test dumps. Various test dump scenarios are estimated to be 500 feet wide x 6,000 ft long, as shown by screened boxes.
A 500-ft buffer would be needed to prevent encroachment effects from neighboring test dumps.


South Jetty
6,000 ft placement run - maximum length
Placement length may vary; less than 6,000 ft
≈ 7,000 ft
60 ft
≈ 7,000 ft
40 ft
N

Potential Deposition Area for Enhanced Placement – Maximum length of each disposal run is to be 6,000 ft. Actual length of test dump disposal runs may be less than 6,000 ft; depending upon behavior of the material during disposal and natural variation in conditions that can effect the hopper dredge during disposal. The deposition rate of dredged material on the seabed will be reduced during the test dumps, by reducing the rate at which dredged material leaves the hopper dredge and/or by increasing vessel speed during disposal.

Test dumps would need to be run in East-West direction based on the need for the hopper dredge to maintain heading based on wave approach (hopper dredge typically needs to head into or follow the waves)

Figure 3

US Army Corps
of Engineers

MCR RSM SUCCESSES AND CHALLENGES

- Excellent collaboration developed with stakeholder groups
- Superb support from scientific community and state and federal agency personnel at all levels
- Authority and/or incremental funding is needed for placement when it is over the cost of the existing project

Questions ?